ITALIAN MEDIUM TANKS

1939–45

F CAPPELLANO & P P BATTISTELLI ILLUSTRATED BY R CHASEMORE

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NEW VANGUARD 195

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ITALIAN MEDIUM TANKS
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HISTORICAL BACKGROUND

Italian strategy and doctrine in the interwar period focused on the concept of a war fought in the mountainous northern regions of the country. This imposed several restrictions on tank production by requiring limited weight, to enable tanks to fit both the small mountain bridges and available bridging equipment, cross-country capabilities and limited range (not to exceed 100km), with tanks carried to combat areas by trucks or special trailers. This led at first to mass production of machine gun-armed light tanks, still providing the bulk of the Italian armoured force in 1940,[1] and delayed the development of a gun-armed medium tank. The limited size of Italian automotive industries (in 1940 only the Ansaldo works produced tanks, their engines being supplied by the SPA factories of the FIAT group) means it is not surprising that development of a medium tank started only in the early 1930s, following the purchase and evaluation of a British-built Vickers-Armstrong 6-ton tank after Ansaldo started to work on a 9-ton turretless tank armed with a 65mm gun mounted in a casemate in 1929. The first prototype produced in 1932 underwent several modifications, and tests started in 1934 without any actual improvement apart from new suspension (introduced in 1935) and the decision to use a diesel oil-fuelled engine in order to increase range and reduce the risks of fire (diesel oil engines would equip all Italian medium tanks and self-propelled guns until 1942). In 1937 the prototype was eventually discarded, although its suspension was retained for use with the new prototype that had been in development since 1936, a 10-ton tank eventually to become the M 11 medium tank, while the proposal for a 12-ton tank developed in 1932–34 never went beyond the drawing stage.

With the new prototype of the 10-ton tank available only in May 1938, the Italian army started to create its armoured force exclusively with the light Carro Veloce 35 (or L 3/35) and the World War I-vintage FIAT 3000, with the first two *brigate corazzate* (armoured brigades) formed in June–July 1937 composed of two FIAT 3000 and one CV 33 tank battalions. At the time, the use of gun-armed tanks was merely envisaged, and only on 10 May 1938 did an army staff memorandum require the new armoured divisions to include three medium tank battalions and a heavy tank one, the latter temporarily replaced by the available medium tanks. With medium tanks not yet available,

1 See NVG 191: *Italian Light Tanks*.

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The first production sample of the M 11/39 tank with the new, round turret being tested. Note the interesting three-tone camouflage of green and brown stripes over dark sand, back in use on Italian armour in 1943.

the new armoured divisions formed in December 1938 were still made of four tank battalions equipped with the light L 3/35 tankettes, while the army was waiting for the development of a 7-ton medium tank (the future L 6 light tank), and an 11–13-ton medium tank with a crew of three or four, armed with two machine guns in a turret mount and a 37/40 gun (later improved to a 47/32mm gun) mounted in a casemate. Other specifications included a 12-hour range on broken terrain and a top speed of 30–35kph. Specifications for the heavy (or P, for *pesante*) tank were also given, to include a weight of 20–25 tons, a top speed of 32kph, a range in broken terrain of ten hours and a quite ludicrous crew of six to eight men to man three machine guns in a turret or casemate mount, and a 47/32 gun in a turret mount.

In December 1938 the army ordered 100 units of the new M 11 tank by November 1939, plus another 50 units to be commissioned and a further order for another 400. A second batch of 400 new medium tanks (the future M 13/40) depended on its actual development, while production of light tanks was intended to come to a halt. By September 1939, when war broke out in Europe, the army deemed necessary 400 medium and 1,200 light tanks but, given the delays in developments and the limited production capabilities of the Italian industry, it is not surprising that at the time Italy entered World War II in June 1940 her tank inventory was made up of some 1,400 light tanks (including some 100 obsolete types) and only 96 new M 11 tanks, thus giving the Italian armoured force a combat effectiveness not much different from what it had been in 1936–37.

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THE MEDIUM TANKS

The M 11/39 tank

Specifications for a medium gun-armed tank were issued in 1936, requiring a crew of three, a 37/40 gun in a casemate mount plus two 8mm machine guns in a turret, with armour capable of protecting from armour-piercing bullets and grenade splinters, and a top speed on the road of 32kph and 12kph off road. The tank was clearly intended for use in mountain areas, given the weight restrictions, and for infantry support. Developed in 1936, the first prototype was built in 1937 with suspension similar (although enlarged) to that of the light L 3/35, a seven-armour-plate turret and a frontal plate with the machine-gun mount. A new prototype, adopting the suspension from the extinct prototype of the first Ansaldo gun-armed tank, was built in 1938 with a different engine, hull and turret design, including the replacement of the visor slots with periscopes. With the latest version of the prototype shown to Mussolini in May 1938, 100 units were commissioned, with the first one produced only in July 1939. At first, production of the M 11/39 (named after weight and year of service) should have been increased to 50, then 400, units but delays in actual production (caused by lack of raw materials and issues with the main gun) and the development of the M 13/40 tank eventually led to the production of the single 100 M 11/39 batch, to be completed in May 1940.

Although short-lived, the M 11/39 tank bore most of the hallmarks of the subsequent Italian tank production; the hull was made of armour plates at minimal angles, bolted or riveted (Italian industry lacked skills for welding, seldom used), with the bottom part of the hull made of a frontal nose plate and a frontal glacis plate connecting to the casemate, with two interconnected plates running on both sides of the hull from the sprocket wheel to the engine compartment. The casemate was made of a frontal, slightly arched plate with the gun mount to the right side and a straight plate with an armoured visor for the driver on the left side, both connected to the side plates by smaller plates.

Mussolini inspecting an M 11/39 tank. Note the open hatch on the fighting compartment roof and the frontal view of the 37/40 gun, clearly showing its limited traverse.

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M 11/39 in Libya in 1940, probably from I and II battalion of the Comando Carri Armati della Libia, as suggested by the overall sand camouflage and the lack of any tactical insignia. More elaborate camouflage and insignias would have been added later.

The engine compartment had on the rear a straight armour plate connecting to the engine deck, divided in two parts. The turret was made of one frontal plate with the machine-gun mount, and seven other plates giving a horseshoe shape. The internal arrangement saw the frontal portion housing transmission, clutch, steering and brake mechanisms, the fighting compartment with the gun on the right side and the driver compartment to the left, with the turret mounted right behind it atop the roof, and the engine compartment to the rear divided from the fighting compartment by a bulkhead. Armour thickness ranged from 6mm on the floor to 30mm on the front plate and front turret (rotating on 360 degrees), the rest having an average 15mm thickness (rear plates ranged from 8 to 15mm) intended to protect at least from 20mm gunfire.

The main armament was a 37/40 (37mm Vickers-Terni L 40) hull-mounted gun in a casemate with 15 degrees horizontal traverse port and starboard, and –8/+12 vertical degrees. This was manned by a single gunner sitting next to the driver, while the commander was also the turret operator, firing the 8mm Breda 38 machine guns in the turret. The crew had at their disposal three access hatches, one on the left side of the hull, one on the fighting compartment's roof atop the gun and one atop the turret. The sprocket wheel was on the front, with suspension being made of four bogie assemblies on each side, each one with four wheels and grouped in pairs by a cradle surmounted by a semi-elliptical leaf spring, with the idle wheel on the back and three return rollers on the top. With 260mm-wide, 84-link tracks and a 12-litre, 105hp SPA 8T eight-cylinder engine, the M 11/39 had a top speed on road of 34kph, 15kph off road, and a range of 210km on road, 120km (or ten hours) off road (the engine, like those of M 13/40 and M 14/41, had four gears with reduction gears). The tracks and suspension were quite reliable, although tracks tended to get loose or break, especially with hard steering, but overall mechanics and the underpowered engine, unsuitable for a 11-ton tank, were excessively prone to breakdowns, thus adding further flaws to an already over-burdened tank.

The first M 11/39 tank equipped company took part in the army field exercises of August 1939, and following delivery of the last unit in May 1940 the M 11/39 tanks equipped two tank battalions of the Ariete armoured division, while some other 24 units were sent to Italian Eastern Africa. By early 1941 all of them were lost, either destroyed or captured by the 9th Australian Division, which pressed them into service, eventually handing them over to the 2nd Armoured Division in spring 1941.

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A first production batch M 13/40 of the IV M tank battalion of the Centauro division in Albania, 1941. The overall grey-green camouflage is heavily covered by dust, and the tactical insignia is barely visible on the hull access hatch.

The M 13/40 and M 14/41 tanks

Given the clear unsuitability of the M 11/39 in tank-versus-tank combat, the army ordered the development of a turret gun-mounted tank, with improved weaponry (the 47/32 standard Italian anti-tank gun), a top speed (on road) of 30–35kph, a crew of three or four, and a range off road of 12 hours. Taking advantage of their experiences with the M 11/39, Ansaldo worked fast and used whatever parts of the M 11/39 that they could; the first prototype was completed by October 1939, maintaining the hull of the M 11/39 with no changes. After the army required some changes a first batch of 400 units was ordered in November 1939, with the new M 13/40 actually entering production early in 1940. The first prototype was shown to the press in February after the army had officially adopted it on the 15th. Once again there were delays, the first 15 units being delivered in July 1940 (the first batch of 400 was due by August). By the end of 1940 the first 250 units of the new tank were available, and were mostly used to equip the tank battalions sent to Libya and subsequently lost during the British offensive of December 1940–February 1941.

Heavier and bigger than the M 11/39 on which it was based, the M 13/40 weighed 14 tons, had a larger and rounded front nose plate, with a smaller front glacis plate (with two small inspection hatches) connected to the driver's front plate by a small section (all plates were bolted and riveted). Side plates were similar to the M 11/39, with two interconnected ones on both sides

A

1: M 11/39 COMANDO CARRI ARMATI DELLA LIBIA, EGYPT, SEPTEMBER 1940

In the summer of 1940 all the available M tank battalions were sent to Egypt, forming at first the Libya tank command, renamed the special or Babini tank brigade in November 1940. First to be sent were the I and II battalion of Ariete division's 32nd *reggimento*. The former had its tanks camouflaged overall in sand with a geometric splinter green pattern, unusual for Italian armour. The battalion also used to have the Italian flag's colours painted on the back of the tank turrets, as a recognition symbol. This tank is the second of the second platoon, first company.

2: M 13/40 XXI *BATTAGLIONE CARRI*, LIBYA, JANUARY 1941

Facing the British offensive in winter 1940–41, all available M tanks were sent to Libya to try and halt the advance into western Cyrenaica. In January 1941 single M 13/40 tanks were used to re-equip the XXI light tank battalion, whose crews escaped from Tobruk after the loss of their vehicles. Hastily formed, the new tank battalion went into battle and was destroyed at Beda Fomm early in February, its tanks still painted in the standard grey-green camouflage. Tactical insignia is of the first tank, third platoon of the first company (note the battalion number below).

3: SYMBOLS

Italian tanks had a large (70cm) white circle painted on the top of the turret or on the rear of the vehicle for identification, in this case sometimes carrying a white cross instead of the circle atop the turret. The motto '*A colpo sicuro*' ('to be quite sure') was carried by the M tanks of LI *battaglione carri* of the Littorio division in the Western Desert. The card insignia shown here, painted on the front hull armour plate close to the driver's visor port, was used as a unit insignia by the first company of IV *battaglione carri* of the 31st *reggimento* of the Centauro division in Albania in early 1941. This was the only M tank battalion to fight in a theatre other than North Africa.

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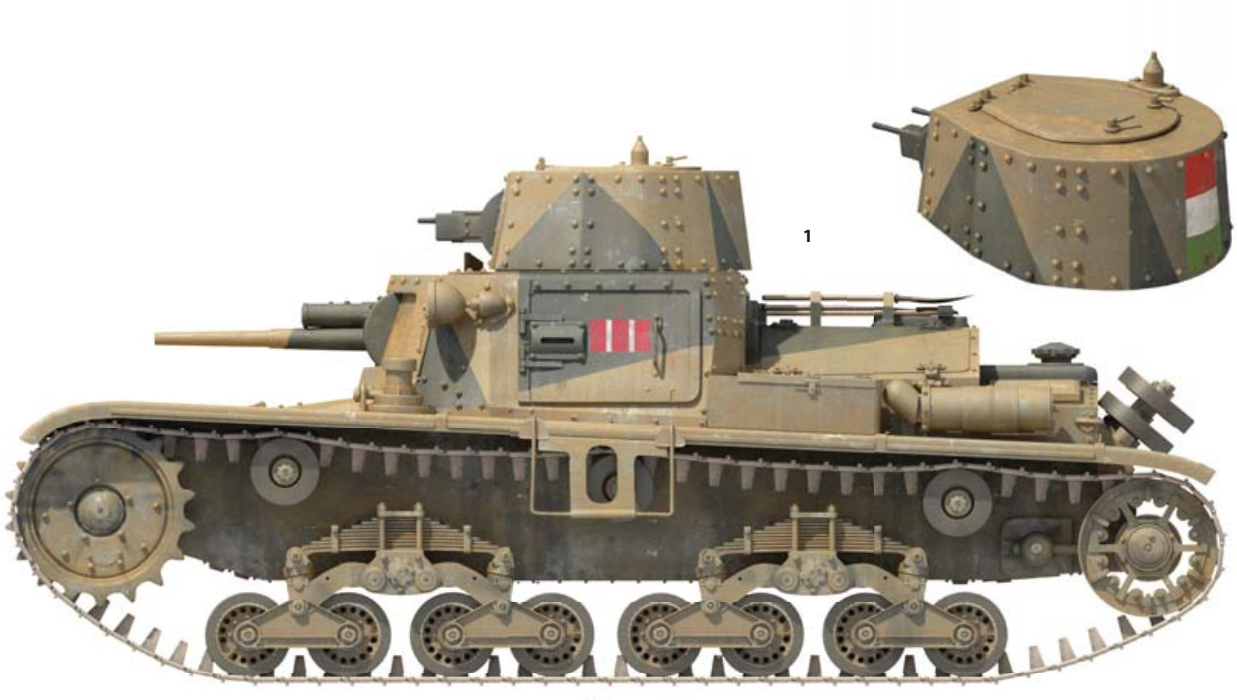

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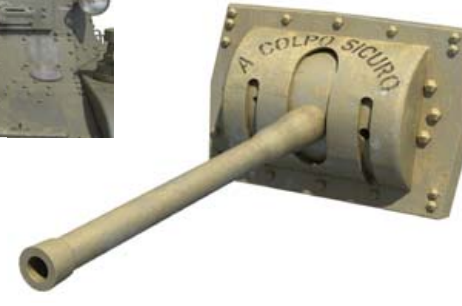

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A close-up view of a late production batch M 13/40 or M 14/41 tank, as suggested by the radio antenna, clearly showing the main gun mantlet and co-axial machine gun, as well as the hull machine guns in their own mantlet. The hole between the two was for the gunsight.

(on the M 11/39 they connected at the engine compartment, on the M 13/40 about mid-hull), running from the sprocket wheel to the end of the engine compartment. The fighting compartment was different and larger than the M 11/39; the driver's plate was on the left side while a protruding, small casemate for the twin machine-gun mantle was to the right side. These were connected to the two large plates on the sides, the left-side one hosting the hull access hatch, themselves connected to the rear plate hosting the protected air ventilation slots. The rear of the tank and the engine compartment did not differ much from those of the M 11/39; the back plate was rectangular, its top shaped like an inverted 'V', with a small triangular compartment used for storage at the bottom, and two spare twin wheels mounted atop. The four hull rear roof plates included two outlet louvres and two engine access hatches, with the exhausts mounted on both hull sides. Fuel tanks, on both sides of the engine, were the same as on the M 11/39. The turret had a front mantle, one rear and five rounded side plates, giving it a round horseshoe shape, with the roof including a large access hatch. The turret, without floor, could be fully rotated either with an oil pressure pump or by a hand-operated traverse mechanism. Armour thickness was improved, with the rounded front nose plate and the front turret plate 30mm thick, all other plates 25mm thick apart from the gun mantle (42mm), the roof (15mm) and the floor (6mm); angles were still minimal, with the front glacis plate at 81 degrees, the driver's front plate at 11 degrees, the turret front at 16 degrees and the sides with a 22-degree angle.

The inside of the tank was divided by a bulkhead between the engine and the fighting compartment, where the driver (to the left) and the machine-

A late production M 13/40, its right fender missing, during field exercises in Italy. The M tanks' suspension bogie assemblies, common to all the Italian medium and heavy tanks, were quite effective but did not grant sufficient reliability and off-road mobility.

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gunner, sometimes also radio operator (to the right) were located, and ahead of them the brakes and steering apparatus. The driver had a frontal armoured visor port that could be closed down in combat, using a periscope mounted on the top of the hull roof. The machine guns, two 8mm Breda 38 with a traverse of 30–15 degrees to the left and the right, were operated manually and aimed with a gunsight mounted between them (there was an external and an internal armoured shield). The fighting compartment also had four visor slots located on the side access hatch, the rear of the right plate and on both sides of the rear plate. The turret gun and co-axial machine gun (a 47/32 gun and an 8mm Breda 38 machine gun) were protected by the front mantle, but had their slots open; they were manned by the tank commander/gunner, sitting on the right, and the loader, sitting on the left, on their foldable seats, with a gunsight, two armoured periscopes on both sides of the turret roof and two visor slots on both sides of the turret at their disposal (all visor slots could also be used as pistol ports). A fourth machine gun was also stored inside, on the right side of the fighting compartment, for use as an anti-aircraft weapon. At the bottom, to the left side of the fighting compartment, were the main ammunition racks for the 47/32 gun (70, later 53, rounds), with 34 rounds ready for use stored at the back of the turret.

Suspension and tracks were the same as on the M 11/39, with the sprocket wheel, the four bogie assemblies and the idle wheel on each side, as were the fuel tanks (main with 145 litres, reserve with 35 litres) and the engine, a 12-litre, eight-cylinder SPA 8 TM 40 diesel oil engine now increased to 125hp. This increase did not prevent the M 13/40 from being underpowered, with a top speed on road of 32kph, 15 off road, its range limited to 200km on road, but still 120km (12 hours) off road. Only since mid-1941 had all the M 13/40 tanks been equipped with a Marelli RF 1 CA radio, located to the right side of the fighting compartment, when the extra 8mm Breda 38 machine gun for anti-aircraft use also became standard.

Minor changes were introduced in subsequent production batches; the second production batch (101st to 300th units), started in late autumn 1940, reduced the length of the fenders to the front of the tank, while the jack (formerly stored on the left front fender, close to the hull) was now stored on the back of the tank on the left side, leaving only one pair of spare wheels on the right side. A new commander/gunner foldable seat was introduced, thus reducing ammunition storage to 53 rounds for the 47/32 gun, as was a new instrument panel for the driver and, from mid-1941, radio apparatus was fitted into all newly produced tanks. The third production batch (301st to 710th, produced from spring 1941) added further modifications to the radiator filler cap, providing a ventilator with a radiator inside the fighting compartment for the engine oil cooling.

Improvements to the cooling systems and filters, particularly needed since the M 13/40 was mainly used in North Africa, only partially solved the many shortcomings demonstrated by the tank during the first trials on the battlefield, the main one being its underpowered engine. In spring 1941 experiments were made in Libya, first fitting an M 13/40 with a petrol-fuelled engine, then in June with a new diesel oil engine providing 20 more horsepower and with improved starter, new air and diesel oil filters, rearranged electrical apparatus and new rechargeable batteries. The eight-cylinder SPA 15T M41, 145hp engine increased tank speed to 33kph on road, 16 off road, without altering the overall structure and performance of the M 13/40 tank.

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A clear colour image of mid-production M 13/40 tanks of VII M tank battalion in Libya, March 1940. Note the lack of radio antennae and the tactical insignia on both hull side and rear engine deck; the one in the foreground is the first tank of first platoon of the first company.

Production of this new batch, named M 14/41 after weight and year of production (this classification system was officially abolished in August 1942, leaving only the type of the tank and its year of production, such as M 40 and M 41; unofficially, the old system remained in use), was started with the 701st unit in August 1941, although some 170 M 13/40 were produced until the end of 1941. The improved M 14/41 was characterized by reinforced fenders running again all along its length as in the first production batch of the M 13/40, different transversal outlet radiator grilles, mud-removing levers positioned right behind the sprocket wheels and, in the last production units, 20-litre can supports (usually four at the rear – two for water, one for fuel and one for lubricant – and two or three on the sides, generally the left). Ammunition storage was increased again, with a total of 87 rounds for the 47/32. Although mechanical reliability was improved on the M 14/41, without

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M 13/40 OF ARIETE ARMOURED DIVISION, WESTERN DESERT, AUGUST 1942

The Ariete (ram) armoured division was the most active Italian armoured unit, fighting in the Western Desert from the spring of 1941 until its eventual destruction at El Alamein on 4 November 1942. First arriving in Libya in February 1941 equipped only with light tanks, with the VII M tank battalion joining the division in March, by August–September the new 132nd *reggimento carri* was fully equipped with M tanks, in particular the mid- and late production batches of the M 13/40 tank featuring short fenders, different side steps, the jack moved from the front fenders to the rear hull and other details. Given the poor armour protection offered by their tanks, Italian crews would store sandbags at the front to increase protection, while carrying 20 litres of extra fuel and water in cans stored on the right side (the left one could not be used because of the access hatch). Such a practice was discouraged by commanders, since it added further weight to an already underpowered engine. The mid-production M 13/40 shown here has the tactical insignia of the fourth tank, first platoon of the first company. Some M tanks were modified with a second radio set, clearly recognizable because of the double radio antennae, and used as radio centres at company and battalion levels. The tank shown here also carries the 'ram' symbol of the Ariete division on the left-side hull access hatch. It also carries the tactical insignia of the command tank of the first company.

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altering its most serious shortcomings, the increase in weight greatly reduced the effects of the new, more powerful engine. Furthermore, when it first made its appearance on the battlefield in late 1941, the M 14/41 was already outdated because of insufficient gunnery and inadequate armour. A total of 710 M 13/40 and 695 M 14/41 were produced, the former from July 1940 to the end of 1941 and the latter from August 1941 to late 1942.

Development of the medium tank: the M 15/42 tank

With the heavy tank being developed from December 1940, in 1941 and 1942 there was no real need for a new development of the medium tank, although the inadequacy of the M 13/40 and M 14/41 tanks and their limited production figures led to a search for stopgap solutions. The first one, sought immediately after the defeats of winter 1940–41, was to ask for German help. A plea was made for captured French tanks, but the Germans failed to meet the Italian request for 800 of these, reduced then to 400, and eventually delivered only a limited number of captured French tanks. These included 109 Renault R 35 and 33 Somua S 35 tanks out of the Italian request for 50 heavy B 2 tanks, 350 R 35s and 50 S 35s, eventually reduced to a total of 135. These were supplied in 1941 and, initially intended to equip a newly formed armoured division, were eventually used for local defence given the lack of spare parts and ammunition. Much more appealing was the German proposal, made in June 1941 to FIAT, for licensed production of the German Panzer III tank, at the time the German main battle tank. In the same month the Italian army also tested the Czech-built Skoda T12, also used by the Germans, but its adoption was eventually rejected.

Early in August 1941 the Germans agreed to authorize licensed production of their Panzer III tank on the condition that the Italians produced it without armament and gunsights. These would have been supplied by the Germans together with half the raw materials needed for the tank production. These restrictions, along with the competition between Ansaldo and FIAT, and the general staff's reluctance to put Italian industry in German hands, soon brought the project to an end. In summer 1941 the Italians reckoned that their heavy tank, cheaper and easier to produce, would be available by the spring of 1942 at about the same time as the licensed Panzer III, making the latter

A German paratrooper watching the tanks and AFVs of the Ariete II division. In the left foreground is an M 15/42 tank (with the insignia of a company command tank), and right behind the paratrooper is a line of *semoventi* M 42 *da* 75/18.

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redundant. Only in February 1942 did the Germans return to the issue, this time with a proposal for licensed production of the Panzer IV tank, but between March and April 1942 both sides agreed to quit the whole matter. It was only after the defeats in North Africa in November 1942 that the Germans made a new proposal for licensed production of the Panther tank, but this too ended in nothing by the spring of 1943.

The only actual development of an Italian medium tank was the Carro M Celere Sahariano (medium Saharan fast tank), in fact a carbon copy of the British A15 Crusader II tank that had been captured in North Africa. This was requested by the army from the FIAT and Ansaldo factories early in 1941 with the aim of developing a medium tank some 15 tons in weight, with a petrol-fuelled engine, Christie-model suspension and large tracks enabling a top speed of 55kph. In June 1941 Ansaldo built a wooden mock-up on the chassis of an M 14/41 tank, still armed with the 47/32 gun. Development of the Christie suspension was quite difficult, however, and only by the spring of 1942 was a real prototype produced, with a crew of four, a weight of 13.5 tons and a petrol-fuelled Type 228 engine with 265hp, enabling a top speed of 55kph on road. Sloped armoured plates retained the same thickness as the M 14/41, 30mm at the front and 25mm on the sides, while armament was a 47/40 gun and a Breda 38 machine gun in a turret. Trials conducted in spring 1943 were satisfactory, but since the Italians were no longer fighting in North Africa there was no need for this tank and, after evaluating a self-propelled variant, the whole project was discarded.

With the slow development of the heavy tank, it was soon clear that some kind of improvement to the M 13 and 14 tanks was necessary to match the improving qualities of the enemy tanks faced in the Western Desert. Gunnery was a sore point, and already in 1940 an improved version of the 47/32 gun was developed with a new breech and increased length that led to the new 47/40 gun, which could also fire the new 'EP' rounds (*effetto pronto* or prompt effect: in fact, hollow charge). A sample of this new gun was mounted in the turret of an M 14/41 tank in 1941, but again delays in the development of the gun and its ammunition hampered developments until 1942 when, taking into account experiences with the Carro M Celere Sahariano and suggestions coming from the crews fighting in

An M 15/42 tank still in the old-style overall grey-green camouflage scheme. Note the racks for water and fuel canisters all along the left side and rear of the hull, this time the right side being left clear for the access hatch. The vehicle's individual number is on the bottom of the tactical insignia (second platoon, as shown by the two bars).

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A staged M 15/42 (with a fantasy symbol on the hull) clearly showing the new design for the engine deck and rear armour plate, the exhaust covers, the right-side access hatch and, on the sprocket drive, the mud-removing device.

Inside view of the fighting compartment of the M 15/42 tank, quite well preserved apart from the missing crew members' seats. At the centre is the hydraulic pump for turret traverse, to the right the firing pedals and, to the left of the driver's visor port, the instrument panel and the racks for the machine-gun ammunition.

the Western Desert, other changes were taken into account. Based on the design of the M 14/41, the M 15/42 was characterized by the new 47/40 gun in the turret mount and the new petrol-fuelled engine, the 12-litre FIAT 190hp SPA 15TB M 42. This required the adoption of a new drive and the corresponding increase of gears to five, with the subsequent lengthening of the tank hull that had the M 15/42 being 15 centimetres longer than the M 13 and 14 (accordingly, tracks had now 86 links). Width and length were unchanged. Other changes to the basic M tank design included the removal of the extra machine gun (the co-axial one could be used for anti-aircraft fire), the shift of the access hatch to the left side of the hull, new armoured protection for the hull machine guns, and a redesigned engine deck and rear hull of the tank, including an armoured heat shield for the exhaust pipes. The first M 15/42 had two racks for fuel canisters on the front nose plate, introduced with the latest batch of M 14/41s, and later on a smoke candles box was added to the rear hull and five extra racks to the sides. The tank had 111 rounds for the 47/40 gun and carried a total of 367 litres of petrol in the main tank, plus another 40 in the reserve, which enabled a range of 220km on road (130 off road, or ten hours) with a speed of 38kph on road, 20 off road.

In October 1942 the army put in an order for 280 M 15/42, while the production of the M 14/41was being halted and the new P 40 heavy tank was also being developed and intended to equip tank units in 1943. In fact, the M 15/42 was already outdated as a medium tank and in March 1943 the army, now focusing almost exclusively on the production of self-propelled guns, cut the order to 220 units, produced by July 1943. The development of variants based on the M tank chassis was likewise extremely limited; in June 1941 the prototype of an armoured observation tank was produced, with an M 13/40 equipped with a large turret carrying a fake gun and a telemeter, but it was never developed. An anti-aircraft M 15/42 tank prototype was also produced in 1943, equipped with a lightly armoured polygonal turret mounting four 20mm Scotti–Isotta Fraschini anti-aircraft guns; the prototype was seized by the Germans after the Italian surrender on 8 September 1943 and apparently (judging by appearances) served as a model for the anti-aircraft version based on the Panzer IV chassis. The only M tank variants actually to have entered production were the radio communication centres (used as command tanks) and the command tank for self-propelled units. The first, officially called *carro centro radio* (radio centre tank), had been produced in

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limited quantities since early 1941 by fitting another radio set into the tank, the Marelli RF 2 CA (Radio Foniche per Carri Armati, phonic radio for tanks) with a range of 7–8km when the tank was moving, increasing to 20–30 when stationary. These tanks, recognizable by their double external antennae, were used as communication centres within the tank battalion and the regimental and divisional HQs, although the lack of suitable batteries (the standard ones were used, requiring the engine to be kept running) limited their effectiveness.

Actual production was limited too, with only ten M 13/40 and two M 14/41 *centro radio* produced by October 1941, with 13 more in the pipeline. The M 15/42 *centro radio* also had the hull machine guns removed, for extra space. Following the formation of the first self-propelled gun units, the *carro comando per reparti semoventi* (command tank for self-propelled guns units) were also produced in late 1941. This model was made by removing the turret from the M 13/40 and placing on the ring an 8mm armoured plate, with two access hatches and an anti-aircraft machine gun. The *carro comando* was also equipped with the standard Marelli RF 1 and 2 CA, plus a telemeter and an extra battery set. The crew still numbered four, with a commander, a driver, a radio operator and machine gunner, and an extra radio operator. The 30 *carro comando* produced in 1941 and based on the M 13/40 chassis retained the two Breda 38 hull machine guns, although these were replaced in the M 14/41 and M 15/42 chassis-based models by a 13.2mm Breda 31 machine gun. Forty-nine of the former were produced in 1941, and 45 of the latter in 1943.

THE HEAVY TANK

The P 40 tank

The idea of a heavy tank had been considered since 1938, the concept of 'heavy' being related to the required weight of 20 tons, the weight limit of pontoon bridges. Other requirements were a top speed of 32kph and an armament including three machine guns and a 47/32 gun in a turret mount. Again, delays influenced its design until Mussolini specifically ordered the development of a heavy tank in August 1940. This was intended to have two main guns in a turret (a 75/18 and a 20mm), 3 or 4 machine guns, a weight of about 25 tons and a crew of five. Three different wooden mock-ups were developed, two by Ansaldo with the driver at the centre and two machine guns on both sides of the hull, and one by the army's centre for motorization studies with the driver on the left and two machine guns on the right of the hull. Both could have either a 450hp 12-cylinder diesel oil engine and a 75/32 gun, or a 12V-cylinder diesel oil engine and a 75/18 gun. Eventually the Ansaldo version was chosen, fitted with the 12V-cylinder diesel oil engine and armed with both a 75/18 and a co-axial 20mm gun in the turret, and with 40mm front armour.

Provisionally named P 75 (after the main gun) or P 26 (after the class of weight), the tank was developed early in 1941 again using

A P 40 tank, missing the front fenders, preserved at the Museo Storico della Motorizzazione at the Cecchignola barracks, Rome. The highly sloped armour plates on the front and the sides can be clearly seen, as well as the 75/34 main gun that was finally adopted for it.

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the chassis of the M 13/40; as a result, the first prototype of mid-1941 resembled an enlarged version of the latter. Changes to the original project led at first to the replacement of the 75/18 gun with the 73/32, now with an 8mm co-axial gun, then, following examination of a captured Soviet T-34 tank supplied by the Germans, the whole project underwent major re-drawing, leading to heavily sloped armour plates with thickness increased from 40 to 50mm on the front, and from 30 to 40mm on the sides. It no longer had the twin 8mm machine guns in the hull, and the main gun was now a 75/34. Weight increase meant the development of a suitable engine, which contributed to delays. FIAT–SPA had many problems in developing a diesel oil engine with more than 300hp, and as a replacement the petrol-fuelled FIAT model 262 engine and the 300hp German Maybach HL 120 were considered. Prototypes and early production samples were still equipped with a diesel oil 330hp SPA 8V 12-cylinder engine, which was to be replaced by a 420hp, 24-litre, 12-cylinder V petrol-fuelled FIAT engine. By July 1942 the second prototype, with weight increased from 20 to 25 tons, was ready for evaluation after the army had already put in an order for 500 units of the new P 40 (after the year of commission) tank in April. Actual production did not start until summer 1943, delayed amongst other things by the bombing of the SPA factory in November 1942, with at least three units delivered before the Italian surrender on 8 September 1943, and 22 incomplete hulls left in the factory.

Early in 1943 the Italian army reckoned not only that the new tank still suffered from the same kind of problems that afflicted the medium ones (mainly related to mechanical unreliability and the engine), but also that the new P 40 tank was markedly inferior to the German Panther tank. Therefore the order for the P 40 was limited to 500 units, to be delivered by the first half of 1944, while a new design was being studied: the P 43. Specifications for this heavier version of the P 40 were first given in December 1941; weight 30 tons, armour plates 50 to 80mm thick, and a main armament made up of either the 75/34 or 105/23 guns. This too was to be equipped with a modified version of the 420hp eight-cylinder SPA engine, eventually to be replaced by a 480hp petrol-fuelled Maybach engine, while front armour thickness was to be increased to 80–100mm and the tank was to have 30kph top speed. By September 1943 the P 43 project was already at an advanced stage, with a forecast of some 150 units to be produced by June 1944, while the pressing need to develop a tank comparable to the German Panther and Tiger led in the meantime to Ansaldo developing the project of the P 40 *bis*; this had heavily sloped armour 50–60mm thick, a weight of 34 tons, a 450hp petrol-fuelled engine, a top speed of 42kph and a 90/42 gun. A wooden mock-up was realized just before the Italian surrender. The prototype of a self-propelled 149/40 artillery gun based on the P 40 chassis was developed in August 1943, but was eventually seized by the Germans and not developed any further. The P 40 was characterized by suspension similar to that on the M tanks, strengthened and modified, and by a redesigned hull with sloped armour plates 50mm thick on the hull front, which had no machine guns but a large vision port for the driver. The turret, with the 75/34 gun and a co-axial 8mm Breda 38 machine gun (also used in anti-aircraft fire) was made of eight main armour plates with a large access hatch on the roof, while the engine compartment was made of five parts with two radiator grilles and two engine inspection doors. The weight was 26 tons, and the maximum speed was 40kph with a range of 150km, both on road. The crew numbered four.

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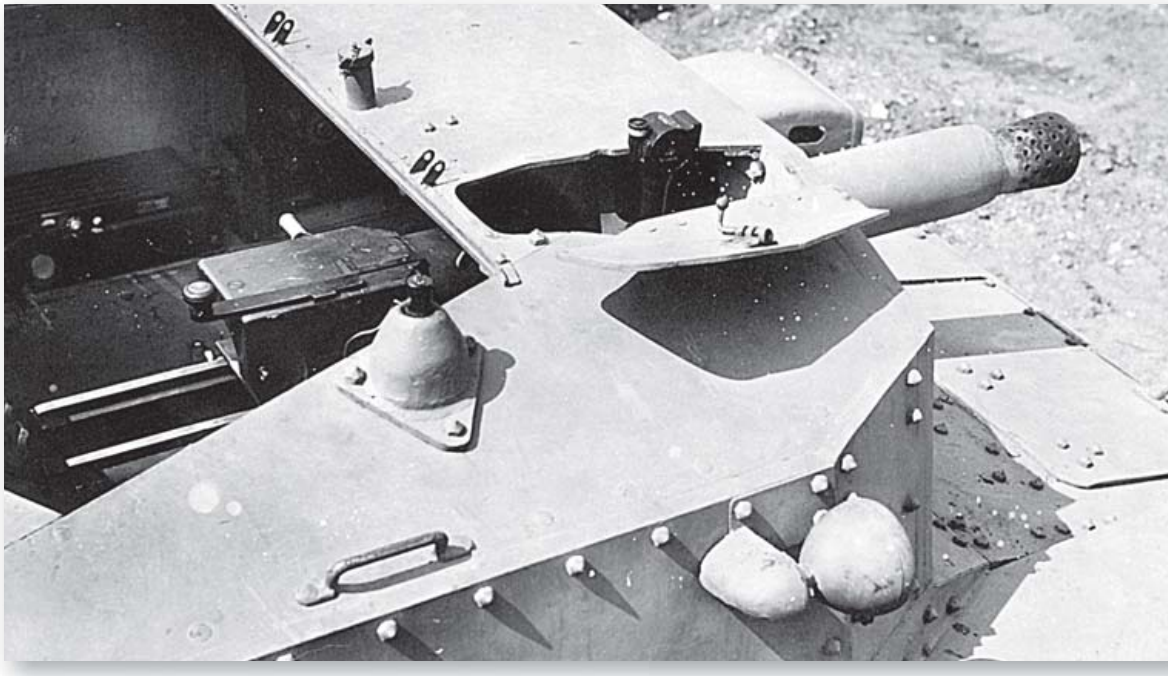
THE *SEMOVENTE* – SELF-PROPELLED GUN

The M 13/40 and M 14/41-based *semoventi*

In 1940 Ansaldo had developed the prototype of a self-propelled gun, for anti-tank use, based on the chassis of the L 3 tank (followed by a wooden mock-up based on the L 6 tank), but after seeing the German Sturmgeschütz self-propelled gun in action in May–June 1940 Ansaldo and proposed a turretless variant of the medium tank with a 75/18 model 34 field gun in a casemate. The project began in September 1940, and a wooden mock-up was produced in January 1941 followed by the first prototype in February. It was immediately approved by the army, which ordered a first batch of 30 units. Built on the chassis of the M 13/40, the *semovente da* 75/18 (75/18 self-propelled gun) retained the hull, the suspension and the engine of the M tank, while the fighting compartment and turret were replaced by a new casemate with large front armour (8 degrees inclined) made of two bolted plates, each 25mm thick, plus two side plates connected to the front and the rear plate (practically the same as on the M tank) by smaller plates. The roof was made of a main plate with two smaller ones on both sides, and it had a large access hatch (the side hull access hatch no longer existed) and a port for a fully rotating periscope. All the vehicles were equipped with a Marelli RF 1 CA radio. With a crew of three and a weight of some 13 tons the *semovente da* 75/18 was smaller than the M 13/40 tank (185cm tall against 237cm). It also had slightly improved speed and range (32kph, 210km on road), while being armed with a more powerful gun which was insufficiently protected by curved shields that proved vulnerable to splinters. Other drawbacks were the same mechanical troubles typical of the M tank, with the small, cramped compartment quickly overheating, forcing the crews to fire with the hatches open. The gun had a traverse of 18 degrees on both sides, –12/+22 vertical degrees, and 44 rounds were stored inside the vehicle.



Close-up view of the right side of a *semovente da* 75/18, showing, apart from the gun breech, the periscope, the gunsight and its port, and the gun barrel with its characteristic muzzle.

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A *semovente* M 41 *da* 75/18 preserved at the Museo della Motorizzazione at the Cecchignola barracks. This vehicle was used in post-war years and had a different antenna mount added to the fighting compartment roof.

The first production batch of 60 *semoventi da* 75/18 was completed in 1941, with production continuing in 1942 now using the chassis of the M 14/41 tank; virtually unaltered, the new version had slightly increased weight (13.5 against 13.1 tons) and speed (34kph on road), and also led to the replacement of the 6.5mm Breda 30 machine gun, which in the first batch was mounted on the casemate roof, with the 8mm Breda 38 machine gun. One hundred and sixty-two units were produced in 1942. Another self-propelled gun was also developed in 1941, on the chassis of the M 14/41, this time armed with the powerful 90/53 anti-aircraft and anti-tank gun, the Italian equivalent of the German 88mm Flak 18/36. Given the size and weight of the gun, the tank chassis was completely redesigned, with the engine moved to the centre of the vehicle, while retaining a small driving compartment where the

Inside view of a restored *semovente da* 78/18 showing the gun breech, the radio set and its battery, the instrument panel and the racks for the machine-gun ammunition.

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A *carro comando semoventi* M 41 (*semoventi* command tank) preserved at the Cecchignola Museo della Motorizzazione, Rome. This was an improved version with a crew of four, a weight of 12.7 tons and a 13.2mm Breda 31 machine gun as main armament.

driver sat alongside one of the gun crew members, with the other two sitting close to the gun on the back of the vehicle. The gun was also on the back, protected only by an armoured shield (15mm thick on the front, 9 on the side and 6 on the roof), which had a 90-degree horizontal traverse and a –5 and +24 degrees vertical. Given the limited space available, which enabled it to carry only eight rounds (each weighing about 10kg), the rest of the crew and 26 plus 40 extra rounds (the latter in a trailer) were carried in an armoured ammunition carrier developed in 1942 from the L 6/40 self-propelled gun. In spite of the excellent gun it carried, the *semovente da* 90/53 greatly suffered from insufficient performance (the maximum speed on road was 25kph, off road 10, with a range on road of 150km, off road 90 km), which was further reduced by the overall weakness of the mechanical parts and of the suspension, burdened by a heavier weight than that of the M 14/41 (15.7 tons against 14.5). This reduced maximum speed on road to 20kph. Thirty were produced in 1941 and 1942; originally intended for use on the Eastern Front, most of them were instead sent to Sicily in late 1942.

The M 15/42 and P 40-based *semoventi*

In October 1942, with production of the M 15/42 due to start soon, the army faced a difficult situation as it was still lacking a heavy tank and without any adequate medium one. This prompted the further development of the *semoventi* by fitting improved guns into the newly built chassis. Production of the *semovente da* 75/18 was continued at first on the M 15/42 chassis (190 were produced in 1942–43), now with a single 50mm-thick casemate frontal armour plate, but requests for improved weaponry led in spring 1943 to the adoption of the recently developed 75/34 gun intended for the P 40. This was an improved version of the 75/32 gun that in 1942 had already been mounted on a few M 14/41-based *semoventi* (the actual number is unknown; apparently they all were seized by the Germans). In March 1943 the prototype of the *semovente* M 42 *da* 75/34 was ready, with production beginning in May; 60 were built before the Italian surrender, but not all of them were actually delivered.

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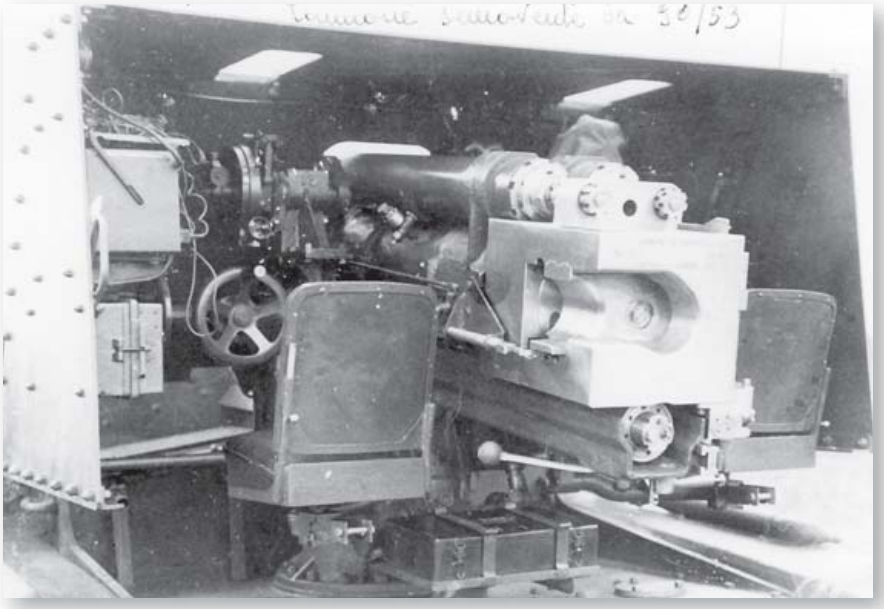
Front view of a *semovente* M 42 *da* 75/18 (left) and a *semovente* M 43 *da* 105/25 at the Ansaldo factory, clearly showing the lower silhouette of the latter that earned it the nickname of *bassotto* (dachshund).

The *semovente* M 42 *da* 75/18 and 75/34 retained most of the characteristics of the M 15/42 tank, with a weight of 15 tons (or 15.3 in the *semovente da* 75/34) against the 15.5 tons of the tank, a maximum speed on the road of 38.4kph (against the 38kph of the tank) and the same height as the *semoventi* M 40 and 41 (width and length were the same as the M 15/42). The *semovente* M 42 *da* 75/18 carried 44 rounds for the main gun, like the M 40 and 41 models, while the *semovente* M 42 *da* 75/34 underwent some modifications to the casemate (it was moved forward 11cm, with subsequent changes made to the armour plates on both front angles and on the casemate roof), and increased the number of rounds stored to 45. By March 1943 the Italian army had already chosen to focus primarily on the production of the *semoventi*, which at the time were the best armoured fighting vehicles (AFVs) in use and also destined to equip part of the tank battalions.



The gun breech and the inside of the fighting compartment of the *semovente* M 41 *da* 90/53. The rest of the gun crew were carried in an armoured carrier derived from the light *semovente* L 40 along with the extra ammunition. On the left are the radio sets.

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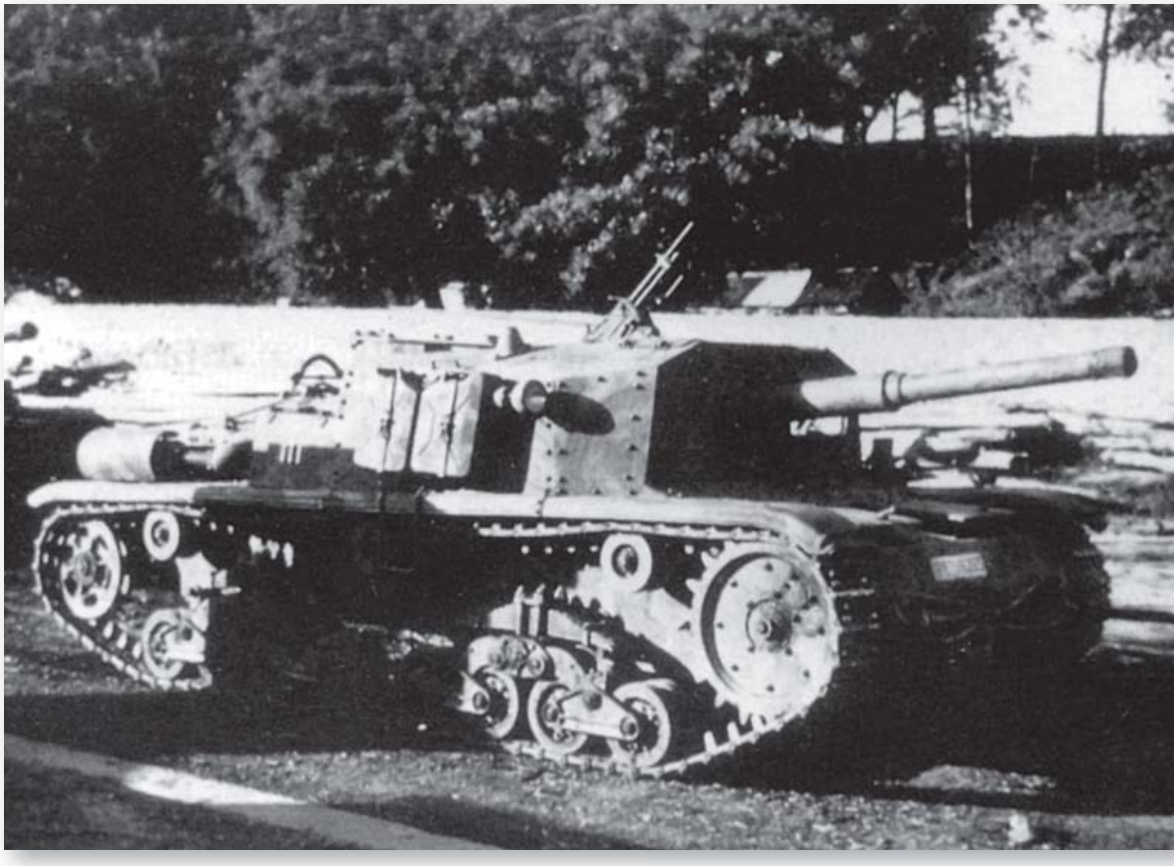
Unsurprisingly, development of the *semovente*, intended at first to be based on the P 40 tank chassis, led to faster and better results than the latter. Given the unavailability of the P 40 tank's chassis, a widened and lengthened version of the M 15/42's chassis was adopted and called at first M 42 L then M 43. With a 5.1m-long and 2.4m-wide chassis, along with a height of only 1.7 metres (which earned it the name of *bassotto*, dachshund), the prototype of the *semovente* M 42 L or M 43 *da* 105/25 was tested in February 1943. At the end of the month, the army put in an order for a batch of 30, first increased to 130 and then, by May, to 200, with 30 units actually delivered before the Italian surrender. The new *semovente*, weighing 15.3 tons, had welded armour plates with the exception of the front glacis and front casemate plates, still bolted and riveted; while retaining the same suspension as the M tanks (the tracks still had 86 links), it had a bigger casemate accommodating the 105/25 gun, with a horizontal traverse of 36 degrees and –10/+18 degree vertical traverse. A total of 48 rounds was available.

The engine was a petrol-fuelled, eight-cylinder, 190hp 12-litre SPA 15 TB that gave the *semovente* a maximum speed of 38kph on road (20 off road) and a range of 200km (130 off road). The maximum thickness of the armour plates was 70mm on the front casemate, 45mm on the sides, 50–55mm on the front nose and glacis plates, and 25mm on the hull sides. A variant armed with a 75/34 gun, an interim solution adopted while waiting for the development of the 75/46 gun, was considered during the spring of 1943. Production started in 1944 and the units produced were supplied to the German army.

A *semovente* M 42 *da* 75/34 of the Ariete II division in the Rome area, summer 1943. Apart from the arrangement of the canisters, it is worth noting the unusual (but clearly necessary) position of the tactical insignia on the spare box immediately behind the fighting compartment.



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PRODUCTION AND USE

The first M tank units formed were the I and II battalions of 32° Reggimento Carri (tank regiment), equipped with the M 11/39, part of the Divisione Corazzata Ariete (armoured division), which sent a 24-tank company from I/32 to Italian East Africa early in 1940 (this, split in two, would fight until March–May 1941). The two battalions, 72 strong, were sent to Libya in July 1940, becoming part of the Comando Carri Armati della Libia (Libya tank command) when it was formed on 29 August 1940. It took part in the Italian advance to Sidi Barrani, starting on 13 September, and on 21 September there were still 68 M 11/39 in running order. Formed in September, the III/32° battalion came to Libya in October 1940 equipped with 37 M 13/40. Along with the other two previously mentioned and the light tank battalions, this formed the Brigata Corazzata Speciale (special tank brigade), or Babini brigade after its commander. An M tank battalion had one M tank in the battalion HQ and two tank companies with 16 tanks each, one in the company HQ plus five in each of the three tank platoons with four extra tanks in reserve (a regiment had 157 tanks, including ten in the regimental HQ). In November 1940 the IV and V M tank battalions were formed too; the former was sent to Albania in December attached to Centauro armoured division's 31° Reggimento, while the latter was sent to Libya to join the Babini brigade.

C

1: *SEMOVENTE* M 40 *DA* 75/18, ARIETE DIVISION, MAY 1942

Although hampered by slow off-road speed and a cramped fighting compartment that compelled crews to keep hatches open when firing, the *semovente da* 75/18, based on the chassis of the M 13/40 tank, provided some much needed firepower to the Italian armoured divisions in spite of its scarce availability. At the time of Rommel's attack against the Gazala line in May 1942, Ariete's DLI and DLII *semoventi* groups had only 20 of them, a figure halved by 18 June. This *semovente* has the typical overall sand camouflage and carries a variation of the tactical insignias used by the Ariete, a smaller top-down symbol for the second battery of the second group, which, along with the number 2, denotes the second command vehicle of the battery, and above it the ram symbol of the division.

2: M 15/42 TANK OF THE ARIETE DIVISION, ROME, SUMMER 1943

After the loss of the three armoured divisions Centauro, Ariete and Littorio in North Africa, the Italian army formed only one replacement armoured division. The 135th *divisione cavalleria corazzata* Ariete (or Ariete II, to distinguish it from the former) was formed on 1 April 1943 in northern Italy as an armoured cavalry unit made up of the cavalry regiments Vittorio Emanuele II (armoured) and Lancieri di Montebello (infantry). Equipped with a wide variety of the more modern Italian armour, including the latest development of the M tanks, the M 15/42, the division was transferred to the Rome area in August, eventually fighting against the Germans after the Italian surrender on 8 September 1943 before being disbanded four days later. In 1943 Italian armour had a three-tone camouflage of sand with green and reddish-brown stripes or patches added. This tank has the tactical insignia of a command tank of the second company.

3: SYMBOLS

The crew of this *semovente* of the Ariete division had a sense of humour, for they painted on the front nose plate not only the double ram insignia, but also added above them and the plate the line '… *Dei tommy il terrore siam … !?*' ('we are the terror of the Tommy!?'), with below what looks like the name given to the *semovente*: '*freccia d'acciaio*' ('steel arrow'). *Semoventi* groups of the Ariete division used a particular system of tactical insignias based on pointed-down coloured triangles (pointed-up insignias were used by command tanks); the first *gruppo* or battalion used a white triangle (first battery) also half-painted black (second battery), while the second *gruppo* used a yellow one (first battery) also half-painted black (second battery). Occasional variations to the scheme were not unusual. The *semoventi* of the Littorio division used on the other hand used a system based on red geometric symbols (circle, triangle, diamond, square).

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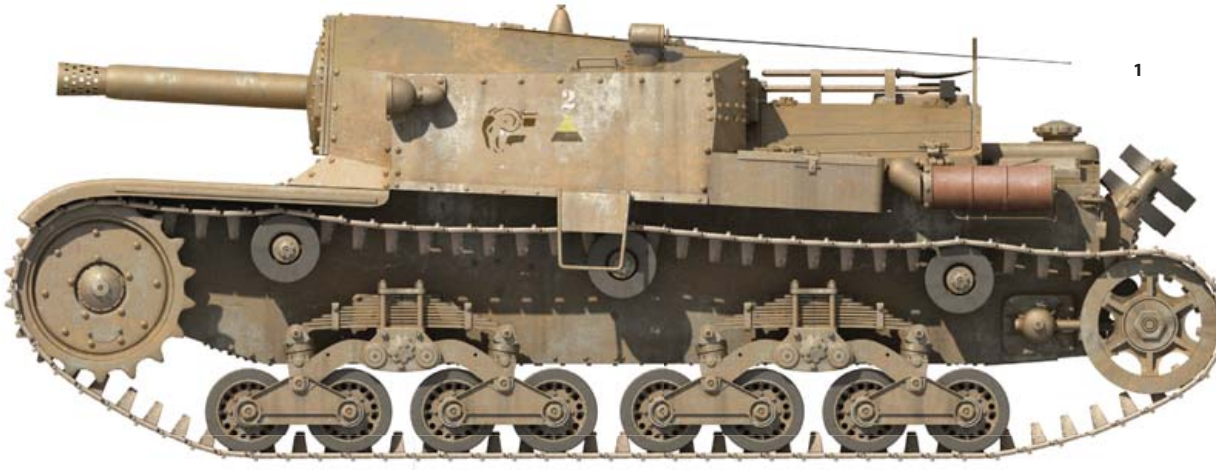

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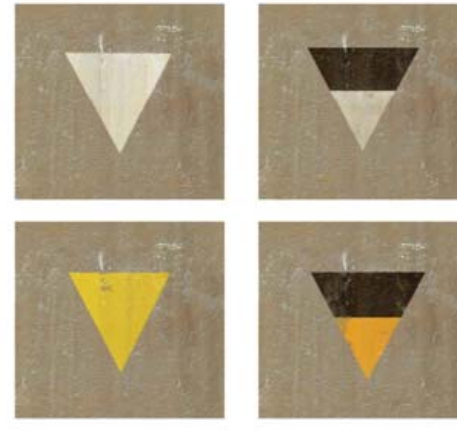

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A late production M 13/40 tank, probably of the XI M tank battalion (first of the Littorio then of the Trieste divisions) as suggested by the practice of stowing fuel and water canisters on the rear hull stowage bin held by a support. Tactical insignia is of a third tank of the first platoon, probably of the first company.

On 9 December the British attack on Sidi Barrani was the first of a series of defeats for the Italian forces in Africa that led to the seizure of Bardia on 5 January 1941, followed on the 23rd by that of Tobruk. By then the Babini brigade had 57 M tanks left, though after the first defeats the army ordered that all available M tanks be sent to Libya, thus leading to the VI battalion being sent in late December 1940, while in January 1941 the crews of the XXI light tank battalion were used to form an impromptu M tank battalion using spare tanks sent from Italy. The battle of Beda Fomm between 5 and 7 February 1941 marked the destruction of the last M tank battalions, with a total loss for the Italians of 72 M 11/39 and 145 M 13/40, to which another ten lost by Centauro's IV battalion between January and March 1941 during the war against Greece should be added. This accounted for roughly 65 per cent of the 1940 production. With the crisis in Africa, only makeshift solutions were possible. In February 1941 the Ariete division was sent to Libya with

A *carro comando* M 41 at the Ansaldo works, clearly showing the 13.2mm Breda 31 machine gun in the hull and the 8mm Breda 38 in the anti-aircraft mount. The command tank, basically a turretless M 14/41, had on top of the roof of the fighting compartment a large, four-part hatch that opened on the sides, fore and aft.

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three light tank battalions, to which the VII medium battalion was attached after its arrival at Tripoli on 11 March 1940 with 46 M 13/40, soon to take part in Rommel's first drive into Cyrenaica. The arrival in June of VIII battalion started a major reorganization leading on 1 September 1941 to the creation of the 132° Reggimento Carri with the VII, VIII and (still arriving) IX battalion; strength rose from 99 M tanks in June to 141 in September 1941. In August tank regiment establishments had been reorganized too, with a total strength of 192 tanks including three in the regimental HQ and 33 reserves, with three battalions each 52 strong with four tanks in battalion HQ, and 16 in each of the three companies, each with one command tank plus five in each of the three tank platoons. In October the LII battalion was also formed and attached to the Raggruppamento Esplorante Corazzato (armoured reconnaissance group) at corps command. When Operation *Crusader* began on 18 November 1941 the Ariete had 141 M tanks, the LII battalion 19.

Following the end of the campaigns in the Balkans in April 1941, in which the IV M tank battalion fought with the Centauro and a platoon of five M 13/40 tanks with the Littorio armoured divisions, a major reorganization of the Italian armoured forces was started. In July the Centauro was brought back to Italy after leaving two light tank battalions behind and in August–September its 31° Reggimento underwent organizational changes, with two of its light tank battalions merging to form the LI M tank battalion, while the XIII battalion was also attached, joining the existing IV battalion. Limited tank production (90 units in June 1941, 75 in July, 31 in August, 101 in September, 93 in October, 79 in November, 86 in December) and the need to feed the units in the Western Desert (in the latter half of 1941 134 tanks were sent to Libya, only 90 actually arriving) slowed the reorganization down, with the Centauro lacking M tanks and having the 131° Regiment (CI, CII, CC battalions) temporarily attached, equipped with French Renault R 35 tanks. The Littorio was apparently given priority and in September 1941 formed the 133° Reggimento with the X, XI, XII M tank battalions plus the DLVI and DLVII *gruppo* (battalion) *semoventi*, each with two battalion HQ command *semoventi*, plus one command *semovente*

A late production, and apparently brand new (or at least recently repainted), M 13/40 of the IX M tank battalion of the Ariete division, eventually disbanded in the first months of 1942. The three-colour (red, blue and yellow) tactical insignia denotes a battalion command tank.

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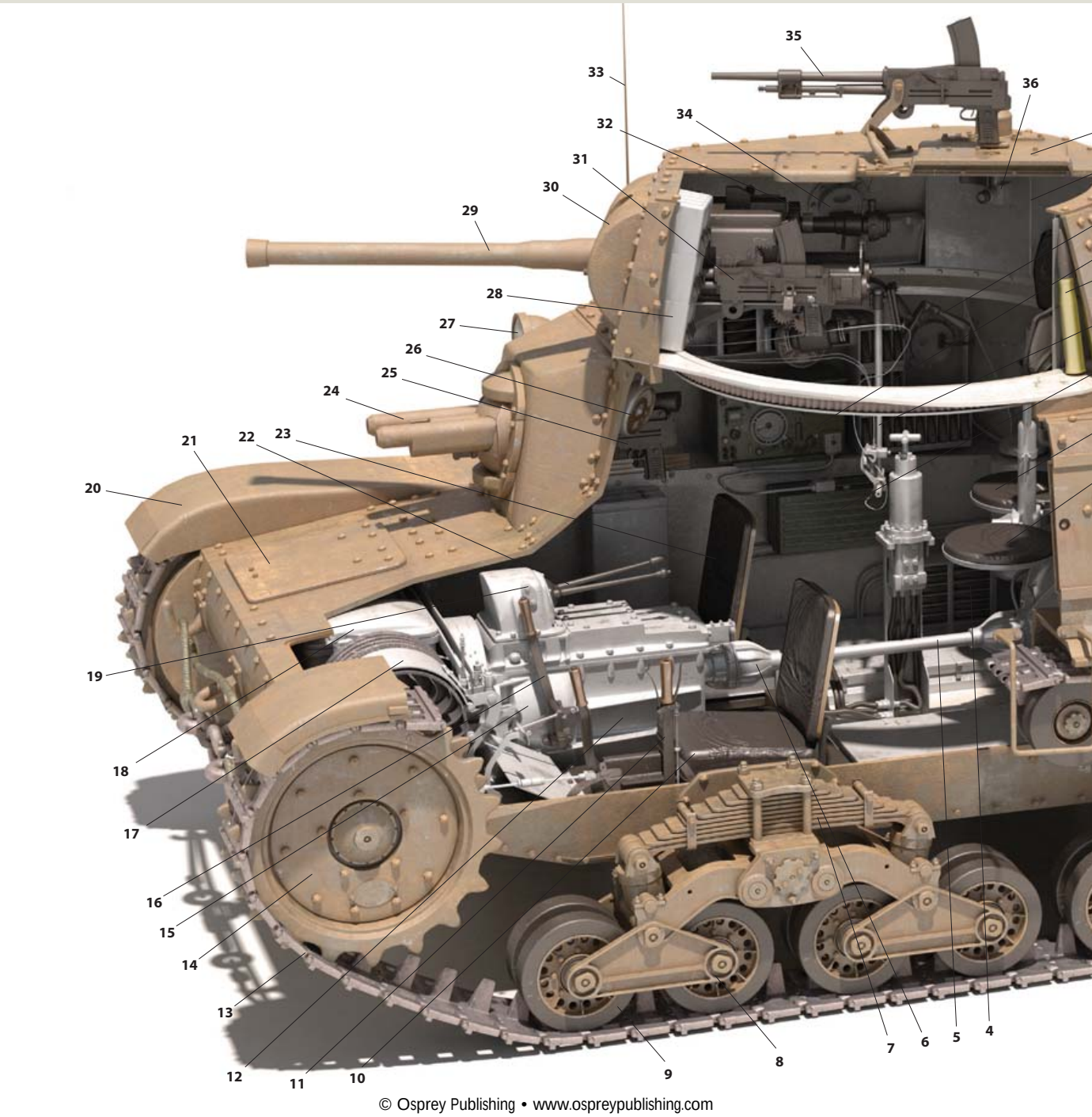
D

M 14/41

Internal arrangement was quite a problem with Italian tanks. The driver had at his disposal a large vision port enabling only limited visibility, greatly reduced during combat when the port was closed. Both he and the machine gunner had 1x scope/gunsight, inadequate for their purposes, while the use of a navy-style 'telegraph' was the only way the commander had to communicate with the driver, who was not connected to the intercom. Both were also far from being functional, since they worked only when the turret was in the forward position; in all other positions, especially when rotating, the commander and the gunner had to disconnect from the intercom (which had not been conceived for rotating turrets) and the former could not reach the telegraph. Even the Calzoni hydraulic pump used to rotate the turret proved dysfunctional, and crews often dismantled it. Even the gunsight for the main gun had only a 1.5x magnification and a 30-degree vision field, which further lessened the gun's efficiency, while both the commander and the gunner could only use scopes that did not enable all-round vision, which was only made possible by opening the large turret hatches.



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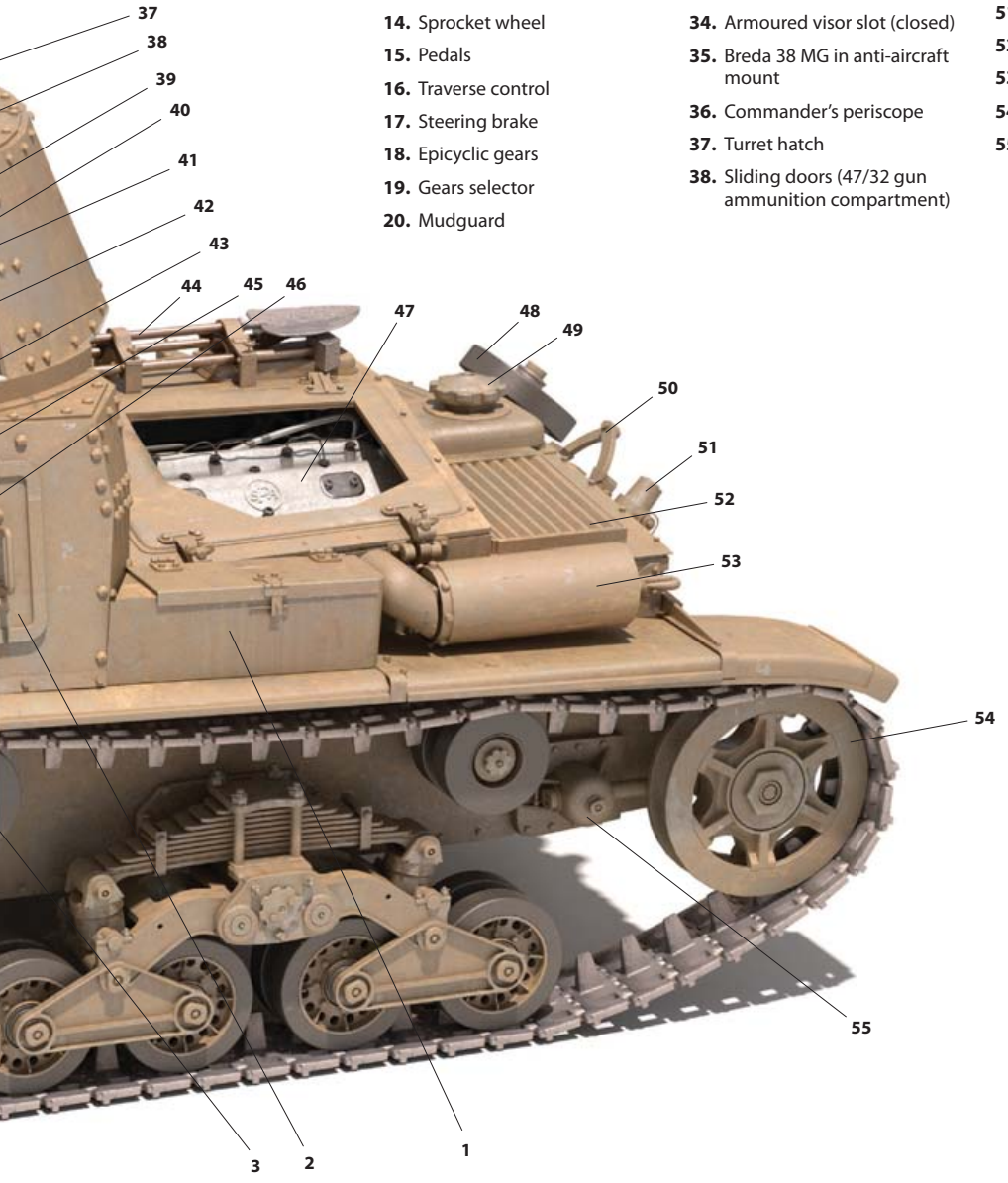
Key

1. Stowage bin
2. Side access hatch
3. Return roller
4. Power traverse control ('Calzoni' pump)
5. Propeller shaft
6. Drive shaft
7. Bogey assembly
8. Semi-eliptic leaf springs
9. Wheel
10. Driver's seat
11. Hand brake
12. Gearbox
13. Track
14. Sprocket wheel
15. Pedals
16. Traverse control
17. Steering brake
18. Epicyclic gears
19. Gears selector
20. Mudguard
21. Brake inspection hatch
22. Gear and gear selector levers
23. Machine gunner / radio operator's seat
24. Hull machine gun shield
25. Hull twin Breda 38 machine gun
26. 'Telegraph' indicator for driver
27. Headlight
28. Spare MG ammunition
29. 47/32 gun
30. Gun mantle
31. Coaxial Breda 38 machine gun
32. 47/32 gun sight
33. Radio antennae
34. Armoured visor slot (closed)
35. Breda 38 MG in anti-aircraft mount
36. Commander's periscope
37. Turret hatch
38. Sliding doors (47/32 gun ammunition compartment)
39. 47/32 gun elevating wheel
40. Marelli RF 1 CA radio set
41. 47/32 gun ammunition compartment
42. Firing pedals (left, machine gun; right, gun)
43. Radio set battery
44. Tools
45. Commander's seat
46. Gunner's seat
47. SPA 15T M41 engine
48. Spare wheel
49. Radiator filler cap
50. Track hook tool
51. Jack
52. Air intake grille
53. Exhaust
54. Idle wheel
55. Idle wheel support and track tension adjustment



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An M 13/40 of Littorio division's 133rd *reggimento carri* in the Western Desert, 1942 (the regimental number is barely visible on the rear left side of the fighting compartment). The photo was probably taken shortly after the arrival of the Littorio division in the area, given the neat condition of the tank.

and four *semoventi* in each one of the two batteries. In December, with the Littorio now earmarked for Libya, army staff developed a reorganization project envisaging the creation of three other armoured divisions and eight armoured reconnaissance groups; requirements were a total of 2,350 M tanks, 190 *semoventi*, almost 1,600 light tanks and *semoventi* plus 1,200 armoured cars, to be produced by December 1942. Not only did estimated production by the end of the year suggest that this programme could not be completed, but actual production fell much shorter and the plan had to be abandoned. Production in June 1942 was 95 M tanks and *semoventi*, but of these 15 were used to supply spare parts, leaving only 12 *semoventi*, eight command and 60 M tanks. In January 1942 there were only 586 M 13/40 and M 14/41 tanks with the units in Italy and in Africa (the other 450 had been lost), plus 60 *semoventi* 75/18 and 30 command tanks, in addition to 304 L 6 light tanks, 11 light *semoventi* 47/32 and 236 armoured cars.

The war in the Western Desert absorbed a good deal of Italian AFVs production, with 1,582 AFVs sent to North Africa in the period June 1940–October 1942. On 17 December 1941 the Ariete had 20 M tanks in running order, but only three by the 26th; by mid-January 1942 there were 93 M tanks in Libya, rising by 1 March to 101 with the Ariete and 64 with the Littorio. In the first six months of 1942, 696 M tanks arrived in Libya, and both the Ariete and the Littorio reorganized. Ariete's 132° Reggimento had the IX battalion disbanded and replaced by the X from Littorio's 133° Reggimento (132° was now with the VII, VIII and X), while the division absorbed the LII battalion (now part of the divisional RECo, Raggruppamento Esplorante Corazzato or armoured recce group) and in May–June 1942 was given the V and VI (renamed DLI and DLII) *semoventi* groups. Littorio's 133° Reggimento also ceded its XI battalion to the motorized infantry division Trieste, getting the IV and LI battalions from Centauro's 31° regiment in replacement. These, along with the depleted XII (many of its tanks sank with their ship) received a large intake of M 13/40-M 14/41 tanks. On 20 May 1942, before the start of Rommel's new offensive, the Ariete had 193 tanks (123 M 13/40, 70 M 14/41) and 20 *semoventi*, Littorio's XII and LI battalions 157 (39 M 13/40, 117 M 14/41, one M 15/42 for tests), the Trieste 52 M 14/41, with another spare 17 M 13/40 and 19 M 14/41 in Libya. The battles

An M15/42 tank carried on a Viberti tank transport trailer towed by a TM 40 tractor. The Viberti trailer was 6.7 metres long, weighed four tons and could carry 14 tons.

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that followed marked the peak of the Italian armoured war; at the end of May the Ariete still had 94 running tanks plus 43 in repair, with Trieste's XI battalion down to 15 operational and 14 in repair. On 18 June the Ariete was down to 50 running and 20 tanks in repair, and 10 *semoventi*; at the end of the month, with the Axis advancing into Egypt, the Littorio (still with two battalions) entered combat with 104 tanks and 10 *semoventi*.

A *semovente* M 40 *da* 75/18 (recognizable by the short fenders) in the desert, well laden with storage, sandbags and track links in order to increase protection.

On 5 August 1942 the Ariete was left with 61 running tanks (one in short-term repair), the Littorio with 38 (26 in repair) and the Trieste with 18 (11 in repair), but at mid-month the Ariete was back to 120 tanks and the Littorio to 107, both also with 33 *semoventi* and command tanks, plus 16 tanks with Trieste's LI battalion. New units and vehicles were sent to the Western Desert, and units were reorganized again; in August LII M tank battalion was disbanded while the DLIV (from the Centauro) and DLVI *semoventi* groups joined the Littorio, along with the IV M tank battalion. The DLV *semoventi* group was still arriving in October 1942, actual deployment of DLIII being uncertain. In September, VIII battalion of Ariete's 132° Reggimento was disbanded and replaced by Centauro's XIII battalion, the Centauro itself being moved to Libya in November 1942 with a largely depleted 31° Reggimento now with the XIV, XV and XVII battalions, along with the XIII, detached to the Ariete, and the XIX, left back in Italy. By 25 November the division had 106 AFVs in Libya. On 27 October 1942, the eve of the El Alamein battle, the Ariete (132° Reggimento with IX, X, XIII battalions; DLI, DLII *semoventi* groups) had 117 M tanks, 17 *semoventi* and 14 command tanks, the Littorio (133° Reggimento with IV, XII, LI battalions; DLIV, DLVI *semoventi* groups) 106 tanks, 16 *semoventi* and 18 command tanks, while Trieste's XI battalion had 33 tanks. All units and tanks were lost by 4 November at the end of the battle.

A brand-new *semovente* M 43 *da* 75/46 at the Ansaldo factory, clearly showing its main gun and the anti-aircraft 8mm Breda 38 machine gun. An interim measure for the 75/46 gun-armed *semovente*, ten units were produced for the Germans in 1944 and 19 in 1945.

Alamein marked the end of the Italian armoured force in North Africa. XIV and XVII battalions of Centauro's 31° Reggimento fought in Tunisia along with the XIII battalion, built with the remnants of the Ariete, mainly as part of the Raggruppamento Cantaluppi (from the commander's name), while the XV battalion was attached to LI Brigade. On 1 January 1943 there were 63 M tanks in Tunisia, 52 on 1 February and 28 on 20 March until, on 5 April 1943, the Centauro

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Mid- and late production M 13/40 tanks of the Ariete division in Libya, probably in autumn 1941. Note the different camouflage of overall sand with no mottles or stripes, and how crew members travelled outside the vehicles, suggesting the photo was taken far away from the front.

was disbanded. The DLIII, DLVII and DLIX *semoventi* groups also fought in Tunisia, although many of their vehicles were lost en route; early in April 1943 there were still 26 M 14/41 tanks and 20 *semoventi*, all lost with the final surrender on 13 May 1943. With the bulk of the Italian armour lost in Africa, Sicily was defended by a mixture of units and AFVs that included the X Raggruppamento Controcarro, formed in 1942 with three *semoventi* groups (CXLI, CXLII, CXLIII) armed with 26 *semoventi da* 90/53, two Renault R 35 tank battalions along with L 3 and FIAT 3000 tanks, all lost by August 1943. In 1942–43 units were newly formed or rebuilt at a slow pace; in February 1942 the 33° Reggimento was rebuilt as an M tank unit, although only the XVIII battalion was actually formed, equipped with both M 15/42 tanks and *semoventi*. It was sent to Sardinia in June 1943 joining the 32° Reggimento, itself rebuilt in May 1942 with the XVI M tank battalion (M 13/40, then M 15/42 and *semoventi*), along with one Somua and one light tank battalion (DLXI *semoventi* group was in Corsica). Also part of 33° Reggimento were the 433rd and 434th replacement battalions, partly equipped with M 15/42 tanks. In August 1943 Centauro's XIX battalion of 31° Reggimento, still in Italy, was equipped with M 15/42 tanks and *semoventi* and was attached to the Blackshirts 'M' armoured division, now redesignated Centauro II. Also in Rome was the DLX *semoventi* group, attached to the infantry Piave division. Still forming in the summer of 1943 were the DLXII *semoventi* group and the I-II P tank battalions, the latter only on paper.

On 1 April 1943 another new armoured division was formed, the Ariete II that moved to Rome in August 1943. Mainly built around armoured cavalry units and incorporating the new mixed organization for tank battalions introduced in March 1943, with companies made up of one tank and two *semoventi* platoons (an organization first suggested in June 1942), the division included the 8° RECo Lancieri di Montebello with, amongst others, the DLVIII *semoventi* group, the 10° Reggimento Lancieri di Vittorio Emanuele II (three battalions), the 235th artillery regiment with one 105/25 *semoventi* group, and the CXXXV 75/34 *semoventi* group. AFVs included 84 M 15/42 tanks, 12 command tanks, 94 *semoventi* 75/18, 12 *semoventi* 75/34 and 12 *semoventi* 105/25. Only a few of these vehicles were destroyed during the fights that saw the Italians opposing the Germans after the Italian surrender on 8 September 1943, with the latter seizing most of the Italian AFVs a couple of days later.

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Tank and *semovente* production, 1940–45

	Available as of 10 June 1940	1940	1941	1942	1943	Total	Seized	Produced 1943–45
L 3	1,320					1,320	148+	17
L 6				402		402	106+	17
M 11/39	100					100		
M 13/40		235	475			710	22	
M 14/41			376	319		695	3	
M 15/42			1	104	115	220	124	28
P 40					1	1	4[a]	101[c]
Command								
M 40			30			30		
M 41				49		49	16+[d]	
M 42					45	45		40
Semovente								
L 40				282		282	86+	120
M 40 75/18			60			60		
M 41 75/18				162		162	131[b]	
M 42 75/18				2	188	190		55
M 41 90/53			30			30	1	
M 42 75/34				1	60	61	36	80
M 43 105/25					30	30	26	91
149/40[e]						1	1	
> M 43 75/34[f]								29
> M 43 75/46[f]								11

[a] latest prototypes, including those without engines

[b] both M 41 and M 42 75/18 *semoventi*, including 11 M 42 as yet undelivered

[c] including 40 without engines

[d] both M 41 and M 42 command tanks, including eight M 42 not yet delivered to the Italian army

[e] prototype

[f] production started under German control (estimated)

Notes: 'Seized' indicates seized by the Germans after Italian surrender on September 1943. 14 of the 36 M 42 75/34 seized by the Germans had not yet been delivered to the Italian army. Also, four M 43 105/25 were destroyed during the fighting against the Germans in Rome in September 1943.

M TANKS AND *SEMOVENTI* IN COMBAT

There were two main drawbacks that influenced the performances of the Italian armour in World War II: their technical qualities and the doctrine and training of the armoured units. While the first factor worsened, in particular when compared to the development of enemy armour, the second improved to a much greater extent than the tests of the battlefield might suggest, for Italian tanks and *semoventi* crews not only proved able to fill to some extent the gaps existing in the fields of doctrine and training, but also did so using AFVs that worsened day by day in comparison to the enemy ones. The first experiences of war in North Africa and the Balkans ended in complete disaster, mostly because of inadequate training and doctrine. Units were hastily created, with the XXI battalion being formed with L 3 light tank crews and thrown into battle in about two weeks, hardly trained at all: in 1940 tank crews were given some 25 days of actual tank training before being sent to the front. Units were employed piecemeal without an overall structure to provide support,

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A late production batch M 13/40, probably belonging to the Littorio division, during the advance into Yugoslavia in April 1941. Italian tanks lacked stowage bins, which compelled their crews to store their stuff and equipment either on the engine deck or on the front glacis. Note the overall sand camouflage.

Mid–late production M 13/40 tanks of the Ariete division in the Western Desert, both camouflaged overall in sand and with the front hulls heavily protected by sandbags, down to the point of covering the driver's vision port too!

particularly lacking recovery vehicles, while coordination was almost impossible given the lack of radio sets. Doctrine that emphasized the need to fire while moving greatly lessened any good qualities the Italian medium tanks had. A report on the first clash between British tanks and the Italian M 11/39 on 5 August 1940 stressed not only the poor hull mount of the 37/40 gun (which otherwise could fire 15 rounds per minute with a muzzle speed of 640 metres per second and was able to penetrate 40mm armour at 500 metres), which did not permit manoeuvre, but also the fact that for every battalion there was only one recovery squad and one repair company. These could not be broken down to follow the tank companies so as a result, six functioning tanks had to be used to tow back six disabled ones. Needless to say, even the Australian and British troops, with better repair support, abandoned the captured M 11/39 and M 13/40 when in trouble.

In spite of their deficiencies, both the M 13/40 and the M 14/41 were still a match for the British Cruiser tanks and the US-built light M 3 'Honey' during 1941, though largely inferior to the British infantry tanks. The standard 47/32 gun used on both models was still effective, with a rate of fire of 20 rounds per minute, a muzzle velocity of 630 metres per second, a range of 700 metres and its 1.44kg shell capable of penetrating 43mm of armour at 500 metres, making it a good match for the British Cruiser III, IV and early VI tanks. However, the EP shell (hollow charge) introduced in late 1941 proved ineffective and was eventually withdrawn from use. Combined with the fact that the new 47/40 gun was only mounted on the M 15/42 tank, this made Italian tanks' gunnery almost useless in 1942, particularly against the US-built Grant and Sherman tanks and the British Valentine tanks. The armour protection of the Italian tanks likewise suffered from lack of improvement. With the frontal armour plates (non face-hardened) having a thickness ranging from 25–30mm (42mm on gun shield), both the M 13/40 and M 14/41 tanks had little chance when facing the standard 2-pounder British anti-tank gun capable of penetrating a 40mm, 30-degree sloped plate at 1,000 yards, 46mm at 750 yards and 52mm at 500 yards. The situation worsened when facing other guns, with the 25-pounder gun able to penetrate 54mm at 1,000 yards (58mm at 750, 63mm at 500), the US 37mm at the same

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range (48mm at 750 yards, 53mm at 500), and the 6-pounder gun able to penetrate 52mm at 1,500 yards, 65mm at 1,000, 72mm at 750 and 79mm at 500 yards. The poor quality of the armour plates, and the uneven quality of the bolting and riveting, made Italian tanks even weaker in comparison. The common practice of reinforcing tanks with sandbags and track sections, very popular amongst crews, was discouraged simply because it added further weight to a tank already suffering from an underpowered engine.

With its initial 105hp in the 8–10-ton M 11/39 tank, the engine was unsuitable for a 14–15-ton tank, having been increased only to 125hp on the M 13/40 and to 145hp on the M 14/41, certainly far from the 300hp of the German medium tanks' engines. This was a decisive factor in the development of the Italian tanks, limited in their weight to 15 tons. It is worth noting that not only did the Italian industry not license-produce German tank engines as it had with aircraft engines, but it also avoided other solutions such as the development of its own version of the Soviet T-34 engine or even the adaptation of aircraft engines, as it had in the past. One of the consequences was the delayed production of the P tank, not to mention the series of problems these engines caused in the medium tanks; the mechanical unreliability of Italian engines was greatly worsened when tanks were employed in the Western Desert, for which no real adaptation had been even considered in spite of the fact that the Italian army had been fighting in the desert with tanks since 1926. In April 1941 the commander of VII tank battalion reported how the engines of its tanks were worn out after only 500km given the lack of suitable air filters, while the problems with a defective lubricating system, inadequate cooling, faulty batteries and higher fuel consumption (in the desert this was three times more than estimated) eventually led the commander of Ariete division to ask openly for a new engine in December 1941. Technical problems were not uncommon on the M tanks, which also suffered from defective transmission and steering, with impromptu solutions such as the removal of the oil pressure pump used to rotate the turret (the hand-operated traverse mechanism was preferred) strongly opposed by unit commanders, even though eventually the pump was no longer fitted in the M 15/42 tank.

The *semoventi*, although based on the medium tank chassis, proved a suitable solution, with their low silhouette, thicker frontal armour plates and more powerful guns. The 75/18 gun had a reduced rate of fire, only ten rounds per minute, and a low muzzle velocity of only 425 metres per second, but this made it perfectly suitable for hollow charge rounds like the 5.2kg EP, which enabled it to penetrate 70mm armour at 500 metres (the characteristics of the 75/34 gun were similar). The 90/53 gun had an impressive rate of 12 rounds per minute, a muzzle velocity of 758 metres per second and a range of 2,000 metres, which enabled its 12.1kg armour-piercing shell to penetrate 140mm armour at

One of the *semoventi da* 90/53 captured by US troops in Sicily in 1943 and eventually moved to the Aberdeen Proving Ground, where it is still preserved. Note the unit insignia on the side of the fighting compartment.

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Front view of a *semovente da* 75/18 in the desert, showing, on top of the fighting compartment roof, the two types of ammunition used. On the left is an HE and on the right an AP shell.

500 metres and 120mm at 1,000m. The 105/25 gun also had a muzzle velocity of 512 metres per second, a range of 1,200 metres and its 14kg hollow charge shell could penetrate 100mm armour at 500 metres (the 75/46 could penetrate 90mm at the same range). The greatly limited number of *semoventi* actually used on the battlefield, not to mention those wasted like the *semoventi* 90/53, never really enabled them to influence events on the battlefield. A summary report written by the Italian command in Libya in April 1943 clearly stated that the M 14/41 tank was already obsolete because of its armour and gunnery, while the *semovente* 75/18 enjoyed both a powerful gun and a reduced vulnerability. This was not just an afterthought; even by the end of Operation *Crusader* the commander of the Ariete division reported that the *semoventi* represented an important step forward despite their shortcomings, like the low muzzle velocity of their guns, insufficient range especially in comparison with the British guns, and excessively slow speed when moving in rough terrain. Other problems were the need to keep hatches open when firing, and the slow rate of fire caused by the lack of automatic mechanisms (the gunner could not fire the gun; the loader did on order).

Even these shortcomings paled in comparison with those of the medium tanks, which, as reported by the Italian liaison with the Panzer Army Africa after El Alamein, were largely outdated in their gunnery, armour, speed, and because of their rustic nature they actually were laughed at by the Allies, who, in their manuals, suggested not taking them into account. Ariete's commander report on the battle of El Alamein stressed how on 4 November 1942 the division faced some 200 Grant tanks supported by 25-pounder guns, which closed in under cover of a smoke screen until they reached some 1,000 metres away from the Italian tanks. The latter were taking fire while being completely unable to harm the enemy with their 47mm guns, that at best only ricocheted on the armour of the Grant tanks. Only by firing on the suspension and tracks were the Italians able to immobilize any enemy tanks, allowing the *semoventi*

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SEMOVENTE M 40 *DA* 75/18 OF THE ARIETE DIVISION, WESTERN DESERT, JANUARY 1942

Produced since mid-1941, the *semovente* M 40 *da* 75/18 retained most of the characteristics of the chassis of the late production M 13/40 tank, most notably the short fenders on the front of the vehicle, the jack located on the rear hull close to the spare wheels, the mushroom-shaped water intake for the radiators, and the strengthened side steps. The first samples were also equipped with a 6.5mm Breda 30 light machine gun (actually an automatic rifle), eventually replaced by the 8mm Breda 38 machine gun in the new version of the *semovente* M 41 *da* 75/18, based on the chassis of the M 14/41 tank. Only 60 M 40 *semoventi da* 75/18 were built as opposed to the 162 M 41 and the 190 M 42 *semoventi da* 75/18 (based on the chassis of the M 15/42 tank). Note the tactical insignia used by the *semoventi* of the Ariete division, also on the rear hull, denoting a vehicle belonging to the second battery of the second battalion.

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A well-laden late production M 13/40 in the desert during a moment of rest. Since the left side of the hull had to be left clear because of the access hatch, storage (usually fuel and water canisters) were carried only on the right side.

Close-up view of a *semovente* M 40 *da* 75/18 in the desert, its front hull laden with track links and sandbags to improve protection. This vehicle has an 8mm Breda 38 machine gun on top, while early samples had a 6.5mm Breda 30 light machine gun.

and the Italian artillery to fire on them. Needless to say the conclusion was that the Italian medium tanks were now completely outdated, not suitable even for reconnaissance given their lack of speed, and only the *semoventi*, improved in their armour and gunnery, were able to face the enemy armour on the battlefield.

Given the above-mentioned shortcomings, it is surprising that the Italian tank and *semoventi* crews managed to last on the battlefield if we also take into account the serious deficiency in training and doctrine. By the summer of 1940 it was clear that officers lacked training, which could not be completed because of the lack of fuel, while non-commissioned officers had been gathered from different units and lacked skills and specialization. The VII tank battalion was formed on 1 February 1941 and comprised two-thirds untrained recruits, completely lacking any training or experience with modern tanks and, in most cases, even the necessary technical skills. Training lasted for just 25 days, with the drivers having all in all driven their vehicles for only two hours and the gunners having practised no more than six times with their guns and machine guns, the unit only having two or three field exercise at platoon level. While this is an extreme example, the situation was certainly not rare. It was only in the spring of 1941 that the Italian army formed a tank training centre at Bracciano, then Civitavecchia, that included a training battalion, and in February 1942 the Libya command formed a tank crew school with the purpose of providing officers and rank and file with specialist training in desert tank warfare. Despite these shortcomings, Italian tanks crews were thrown into combat, and gained experience on the battlefield. A March 1942 report describes a typical tank-versus-tank combat between the British and Italian tanks in the Western Desert. The British tanks opened fire at 1,500 metres, closing to 1,000 to halt the tanks and improve precision; given the lack of effectiveness of their 47/32 gun, the Italian tank crews held their fire until closing to less than 1,000 metres, when their fire could be effective while sparing ammunition. At this point the two tank formations closed down at a slower speed, with the British tanks exploiting their superior speed and manoeuvrability to attack the Italians on the flanks, at distances down to 200 metres, while some other tanks approached frontally, closing at some 300–400 metres.

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This final stage was the climax of a tank battle, where one of the two sides, both suffering from tank losses, crew casualties and ammunition shortages, would break off the engagement and withdraw, avoiding the frontal clash. It was at this point that the Italian tanks became even more vulnerable, as the faster British tanks were able to either outrun any pursuit or, if victorious, catch and overwhelm what was left of the Italian armour.

In such conditions the Italian tanks sometimes outfought the British ones, as happened on 19 November 1941 when the British 22nd Armoured Brigade attacked the positions of a still inexperienced Ariete division at Bir el Gubi in the opening stages of Operation *Crusader*. Lacking infantry support the British A 15 Cruiser tanks were soon outflanked by the Italians, who, their artillery firing in close cooperation, destroyed 25 enemy tanks and damaged another 25 (figures are still debated) at the cost of 34 of their own. Unsurprisingly, the Italians soon learned from the German experience the use of mixed combat groups made of one tank battalion supported by an infantry one, plus one artillery battalion, anti-tank and anti-aircraft guns, although their actual use was greatly hampered by the lack of adequate radio communications. During the winter battle of 1941–42 the corps command of the Ariete and Trieste divisions had only three radio sets available, all with inadequate range. This was a problem that not even the availability of the radio and command tanks made good, for at El Alamein the Ariete division commander remarked how his own HQ had neither of them, and not even any kind of AFVs to protect itself.

A *carro comando* M 40 on the move, probably in Tunisia in 1943. Although an improvement over the radio centre tanks, it still suffered the same shortcomings of the tank whose chassis it was based upon, most notably lack of adequate protection and insufficient space on the inside.

The logical conclusion is that Italian armour in World War II was far from a success, but also far from a complete failure. Slow and belated tank and *semoventi* development, leading to the use of inadequate if not largely outdated AFVs, was only one of the factors affecting the eventual outcome of the Italian war effort in the field of armour, the others being production difficulties, further worsened by a rather odd allocation of the available tanks and *semoventi*, and a lack of suitable doctrines and training that led to the early disasters. Yet, taking advantage of their experience, crews and units on the battlefield were able to make good some of these shortcomings, but were completely unable to compensate for those lying well beyond their capabilities: unit organization, supplies, technical support and modern tanks and *semoventi* that could enable them to face their enemies on level ground.

MEDIUM TANKS IN GERMAN SERVICE

With the Italian surrender in September 1943, relatively large numbers of Italian AFVs fell into German hands and production continued until 1945, using at first available hulls and parts, then with an emphasis on the last generation of *semoventi* and the P 40 tank. First use was made by the units that actually seized these AFVs, most notably the 2nd Fallschirmjäger Division in Rome that discharged all of them when transferred to the Eastern Front

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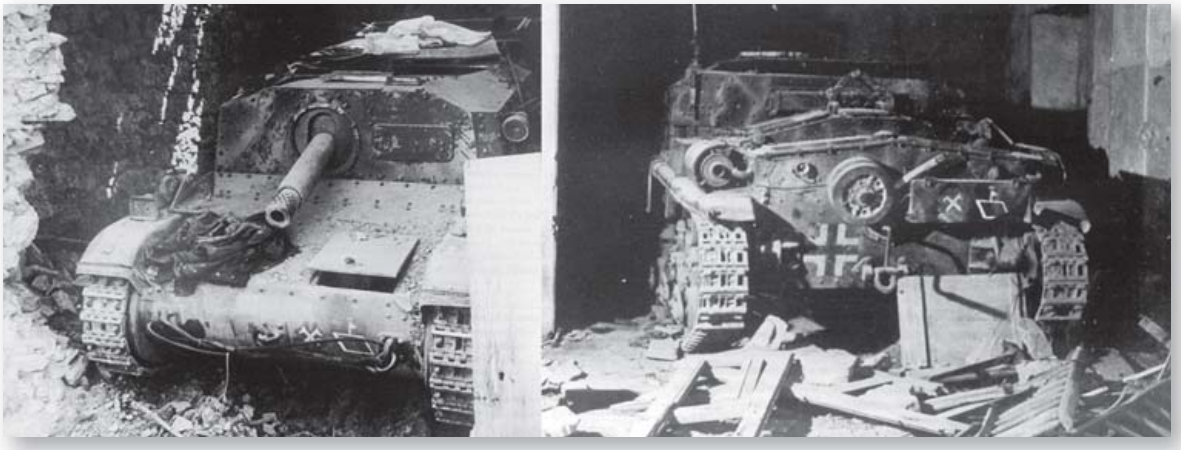

A *semovente* M 42 *da* 75/18 used by the German 71st infantry division put out of action during the battles on the Gothic line and subsequently abandoned. It still has the three-tone Italian camouflage and sports the name 'Marga', the German cross, the tactical symbol for the anti-tank units and the insignia of the division. (US National Archives and Records Administration)

(no German parachute division made use of the Italian tanks and *semoventi*). Early use on the battlefield also proved disappointing; in September–October 1943 both the 15th Panzergrenadier and the 26th Panzer divisions fighting on the Italian front were given 24–25 *semoventi*, all lost during the battles of winter 1943–44 and not to be replaced. Both divisions had not had Italian *semoventi* since early 1944, when these were used to equip infantry divisions and Sturmgeschütz units; of the latter both Fallschirm Sturmgeschütz Abteilung 11 and Sturmgeschütz Brigade 914 (both fighting on the Italian front) were equipped with *semoventi* in late 1943–February 1944 (the first had 48 *semoventi* in January 1944, the second 31 105/25 M 43 *semoventi* in February), and continued to use them until the end of the war. From late 1943 the second companies of the Panzerjäger Abteilung (anti-tank detachment) of the infantry divisions fighting in Italy began to be equipped with *semoventi*.

First to use the *semoventi* were the 44th, 65th, 71st, 305th and 334th infantry divisions, each equipped with 14 to 21 mixed vehicles (M 42 *semoventi* 75/18 and 75/43, and M 43 105/25). In the first four months of 1944 the 94th, 278th, 356th and 362nd infantry, 5th Gebirgsjäger and 114th Jäger divisions were also equipped with some 14 mixed *semoventi* each, followed in May by the 162nd infantry division, mostly employed in rear area security. In late 1943 and early 1944 the Hermann Göring Panzer Fallschirm Division received ten *semoventi*, although it does not seem to have replaced losses and no longer had them later in the year. The last units to be equipped with the Italian *semoventi* were the 42nd Jäger division (from late 1944, with four *semoventi* handed over from other units) and the 8th Gebirgsjäger

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M 14/41 XIII BATTAGLIONE CARRI ARIETE DIVISION, EGYPT, AUTUMN 1942

In September–October 1942 XIII M tank battalion of the 31st *reggimento carri* of the Centauro armoured division was moved to the Western Desert newly equipped with the M 14/41 tanks, an improvement on the M 13/40. The battalion was eventually attached to the Ariete armoured division replacing the disbanded VIII battalion of Ariete's 132nd *reggimento carri*, although the tanks retained the original regimental number on the rear side of the fighting compartment along with the battalion number (left and right). The M 14/41 could be distinguished from the M 13/40 by the elongated fenders, also used on the first production batch of the M 13/40, but in this case with the jack carried on the front left fenders (the M 14/41 carried it on the rear hull). Only a few units camouflaged their tanks with green or brown stripes over the standard sand colour, particularly the last ones to arrive in the Western Desert.

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A brand-new *semovente* M 43 *da* 105/25 with the new three-tone camouflage at the Ansaldo factory, 1943. Only 30 units of this new *semovente* were delivered to the Italian army before the surrender in September 1943, most of them to be captured by the Germans.

division (eight *semoventi* from other units in March 1945), all in Italy. In fact, available Italian tanks and *semoventi* were mostly supplied following a simple scheme: units in the Balkans generally used M tanks (along with a large portion of the light tanks and the derived *semoventi*), while those in Italy had the exclusive use of the *semoventi*. In spite of their availability, M tanks had only limited use; in October 1943 the SS-Panzer Abteilung 105 had 23 M tanks and five *semoventi* before being split up in late 1944 to form other units. From February 1944 the Panzer Abteilung 202 in Yugoslavia started to replace its French tanks with the Italian M 15/42 models, 67 of which were supplied but only a quarter of them could be kept in running order, quite a common problem. In March Panzer Abteilung z.b.V. 12 (also in Yugoslavia) was supplied with 43 M 15/42 tanks, partly used to provide spare parts, while both the SS volunteer divisions 21st Skandenberg and 22nd Maria Theresia used M tanks (in Italy only the Panzer Ausbildungs Abteilung Süd, a training and depot unit, had them).

The truth is that in spite of figures, many Italian tanks and *semoventi* were stored and not used, with many of the newly produced ones eventually not being fully operational. The case of the P 40 tank is revealing; first tested by the Panzer Ausbildungs Abteilung Süd, it soon revealed its shortcomings, and 40 out of the 101 produced had no engine and were used as armoured pillboxes on the Gothic line. In July 1944 14 P 40 tanks were supplied to the 24th Waffen Grenadier Brigade der SS Karstjäger, fighting on the Italian–Yugoslav border, mostly kept under constant maintenance and rarely in running order (at best only half could be used). In September the tank was deemed unsuitable for frontline use and 40 were supplied to SS and police units in Italy forming 10 Polizei Panzer Kompanie. After late 1944 the M tanks were no longer produced and, although production of the P 40 continued, it focused on the much more reliable *semoventi*. This also included the M 43 75/46 *semovente*, whose first units were produced from late 1944 under German control allegedly with a provisional 75/34 gun due to the lack of the 75/46 one. A definite improvement, this new 15.5–16-ton *semovente* had appliqué armour plates on both sides and front (the first one had 70mm front armour, the second an additional 30mm), improved sprocket wheels (sometimes with the Ostketten track extensions applied) and a new gun mantlet, used for both guns, which made it quite an effective weapon in spite of the few units actually produced.

In December 1944 there were six M 13-14 tanks in German use in Italy and 19 in Yugoslavia, plus five M 15/42 in Italy and 85 in Yugoslavia. Also in use in Italy were 28 command tanks, 45 P 40 tanks, 92 *semoventi* with a 75mm gun (nine used by police units) and 66 with a 105mm one. On 23 March 1945 there were still 146 *semoventi* and 20 command tanks in German use in Italy.

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CAMOUFLAGE AND MARKINGS

M 11/39 tanks were painted at first in dark earth-red-brown overall, sometimes with grey-green mottles and stripes added, while in 1940 the M 13/40 tanks were painted in the standard grey-green colour used on all motor vehicles, in some cases with earth-red-brown mottles or stripes added. Tanks sent to Libya were eventually repainted overall in sand, in the case of the M 11/39 with a variation of camouflage schemes, missing in most cases in the hastily repainted M 13/40. In March 1941 army staff ordered that the tanks sent to Libya be painted overall in sand yellow (or Saharan khaki), while grey-green was retained as the standard European colour. Both could be covered with appropriate mottles or stripes, often mainly on the initiative of their crews. First introduced in 1942, in May 1943 a new camouflage scheme was adopted for all the AFVs based on overall sand yellow with large rounded blotches or patches of dark earth and grey-green, either sprayed or painted. Vehicles still in the old grey-green or sand-yellow camouflage had to be overpainted, but many were still in the old camouflage scheme at the time of the Italian surrender in September 1943. That August the army had ordered that new vehicles be painted overall grey-green with green, dark-brown and sand-yellow blotches; as a result, in the last months before the surrender the Italian AFVs were painted in a variety of camouflage schemes and colours.

Two late production M 13/40 of Ariete division's VII M tank battalion in the Western Desert; note how they are painted overall in sand with green mottles, the white identification cross atop the turret and the position of the tactical insignias (foreground first, background third platoon), later moved to the turret sides.

Late production M 13/40 tanks of IX M tank battalion of the 132nd *reggimento* of the Ariete armoured division in the Western Desert, 1941. Note the regimental/battalion numbers carried on the rear hull plates of the fighting compartment and the unusual position of the tactical insignia, on the rear of the turret.

Through the war, Italian AFVs used colour- and bar-coded rectangles within their units. Coloured rectangles denoted units (black, regimental HQ; red and blue, or red, blue and yellow, battalion HQ with two and three companies respectively; red, first company; blue, second company; yellow, third; green, fourth), while bars denoted the position within it (HQ tanks, no bars; one bar, first platoon; two, second; three, third; four, fourth; diagonal bar, fifth platoon). HQ tanks carried the number of the battalion (or even regiment) above the rectangles, others carried the individual number above the rectangle and, sometimes, the battalion one below. Reserve tanks used at first the letter 'R', subsequently only the regiment/battalion numbers. The *semoventi* used a different scheme made of inverted triangles: white for the first battery; black and white for the second of the first battalion; yellow and black, and yellow for the second battalion. HQ *semoventi* had the triangles pointing upwards.

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SURVIVING VEHICLES

There are only two M 13/40 preserved, one at the Aberdeen Proving Ground in Maryland, USA (where a *semovente* M 41 *da* 90/53 and the prototype of the *semovente da* 149/40 are also preserved) and another at the Canadian museum at Borden. Also preserved in Canada, at Wainwright, is one of the seven existing M 14/41; another is at the Bovington Tank Museum, UK, and the third outside of Italy is at the El Alamein museum in Egypt. An M 14/41 is at the Infantry Museum in Rome, with others preserved in barracks and monuments at Novara and Lecce. Other than the M 15/42 preserved at the Museo della Motorizzazione Militare in Rome at the Cecchignola barracks (where there are also one P 40 tank, a *semovente* M 41 *da* 75/18 and a *carro comando* M 41), there is another at the Saumur museum in France (along with one of the two existing *semovente* M 40 *da* 75/18, the other one at the El Alamein museum in Egypt); amongst others two M 15/42 are in running condition, one at the Cordenons army barracks and one in the private collection of Fabio Temeroli. Some *semoventi* M 41 *da* 75/18 are preserved in army barracks, with one at the Army Historical Branch in Rome and another at the de Henriquez museum in Trieste. The OTO Melara-owned *semovente* M 41 at La Spezia is in running order. Four *semoventi* M 42 *da* 75/18 are preserved, the best ones at Bellinzago Novarese army barracks and at the aviation museum in Rimini.

An M 14/41 preserved at the Museo della Fanteria in Rome, painted overall in sand with the tactical insignia of the second company (blue rectangle) commander.

G

1: P 40 TANK, 24TH WAFFEN-GRENADIER BRIGADE DER SS, APRIL 1945

Only three samples of the heavy P 40 tank had been produced at the time of the Italian surrender in September 1943, while another 22 hulls were ready at the Ansaldo factory. The Germans soon had six tanks built and tested, with one sample of the P 40 being shown to Hitler in late October. However, the unreliability of the FIAT engine made the tank, in fact already obsolete, unsuitable for any use other than rear area security, and half of the 150 units requested by the Germans in the autumn of 1943 (and due to be completed by early–mid-1944) were to be produced without engines and other mechanical parts, for use as pillboxes. Of the 101 P 40 produced, 14 were given to the 24th Waffen-Grenadier Brigade der SS (SS volunteers brigade) fighting the partisans on the Italian–Yugoslav border, all retaining the Italian 1943 standard camouflage with German crosses and tactical numbers added.

2: *SEMOVENTE* M 43 DA 105/25, ITALY, MAY 1944

The Germans made extensive use of the *semoventi* that were used to equip the second companies of the Panzerjäger (anti-tank) battalions of the infantry divisions fighting on the Italian front. The *semovente* M 43 was based on the lengthened hull of the M 15/42 tank, and included several improvements, such as welded armour plates and the 105/25 gun that was at the time one of the most powerful, while its low silhouette (lower than the *semovente* M 42) earned it the name of 'dachshund'. Twenty-six of the 30 samples delivered to the Italian army by September 1943 were captured by the Germans, who ordered a further 91 units produced in 1943–44. Vehicles retained their Italian camouflage with German markings and insignias, with crews sometimes adding names on the front or side armour plates.

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1

2

Gerda

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SPECIFICATIONS

Tank	M 11/39	M 13/40 (M 14/41)	M 15/42
Crew	3	4	4
Weight	11 tons	14 tons (14.5 tons)	15.5 tons
Dimensions			
Length	4.85 metres	4.92 metres	5.06 metres
Width	2.18 metres	2.28 metres	2.28 metres
Height	2.25 metres	2.37 metres	2.37 metres
Armour			
Front	30mm	30–42mm	45–87mm
Sides/rear	15mm	25mm	25mm
Floor/roof	8–15mm	6–15mm	6–15mm
Powerplant	SPA 8T engine 105hp at 1,800rpm	SPA 8T engine 125hp at 1,800rpm (SPA 15T engine 145hp at 1,900rpm)	SPA 15TB M42 engine 190hp at 2,400rpm
Speed			
Max. (road)	34kph	32kph (33kph)	38kph
Off road	15kph	15kph	20kph
Range			
Road	210km	200km	220km
Off road	120km	120km	130km
Armament	37/40 gun, 84 rounds 2 x 8mm Breda 38 MG 2,808 rounds	47/32 gun, 87 rounds 4 x 8mm Breda 38 MG 2,592 rounds	47/40 gun, 87 rounds 3 x 8mm Breda 38 MG 2,592 rounds
Ground clearance	36cm	41cm	41cm
Fording depth	100cm	100cm	100cm
Trench crossing	2 metres	2.1 metres	2.1 metres
Vertical obstacle	80cm	80cm	80cm
Climbing ability	45°	40°	60°

Semovente	Semovente M 40 da 75/18 (M 41)	Semovente M 42 da 75/18 (M 42 da 75/34)	Semovente M 43 da 105/25
Crew	3	3	3
Weight	13.1 tons (13.5 tons)	15 tons (15.3 tons)	15.7 tons
Dimensions			
Length	4.92 metres	5.06 metres	5.06 metres
Width	2.28 metres	2.28 metres	2.28 metres
Height	1.85 metres	1.85 metres	1.85 metres
Armour			
Front	30–50mm	30–50mm	50–70mm
Sides/rear	25mm	25mm	25–45mm
Floor/roof	6–9mm	6–9mm	10–15mm
Powerplant	SPA 8T engine 125hp at 1,800rpm (SPA 15T engine 145hp at 1,900rpm)	SPA 15TB M42 engine 190hp at 2,400rpm	SPA 15TB M42 engine 190hp at 2,400rpm
Speed			
Max. (road)	32kph (34kph)	39kph	38kph
Off road	15kph	20kph	20kph

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Range			
Road	210km	200km	200 km
Off road	120km	130km	130km
Armament	75/18 gun, 44 rounds 8mm Breda 38 MG 1,104 rounds	75/18 gun, 44 rounds 8mm Breda 38 MG 1,104 rounds (75/34 gun, 45 rounds 1,344 MG rounds)	105/25 gun, 48 rounds 8mm Breda 38 MG 864 rounds
Ground clearance	33cm	33cm	33cm
Fording depth	100cm	100cm	100cm
Trench crossing	2 metres	2 metres	2 metres
Vertical obstacle	80cm	80cm	90cm
Climbing ability	45°	60°	100°

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A preserved *semovente* M 41 *da* 75/18 held at the Ufficio Storico dell'Esercito in Rome, completely restored to its original condition and with a sand-and-green-stripe camouflage added.

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AUTHORS' NOTE

In the Italian language male nouns (generally ending in 'o' or 'e') have their plurals by changing the last letter, generally an 'i' (i.e. *divisione*, *divisioni*); female nouns (ending in 'a') change the last letter in an 'e' (i.e. *compagnia*, *compagnie*). Nouns like Bersaglieri and Arditi are plural. The basic army commands and units include an army (*armata*), an army corps (*corpo d'armata*), a division (*divisione*), a regiment (*reggimento*) and its equivalent group (*gruppo* or *raggruppamento*), a battalion (*battaglione*), a company (*compagnia*), a platoon (*plotone*) and squad (*squadra*). Cardinal numbers are shown by a ° (with male nouns) or a ª (with female nouns) after the number.

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